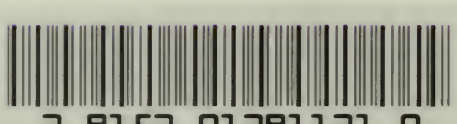
PRELUDE TO BRASS PLAYING

by

Rafael Méndez



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INITIATION INTO MUSIC

Hi! Let's draw up a couple of chairs, sit back, relax, and get acquainted. Knowing each other will be important, because, from this moment on, we become a team; we'll work together to ensure that you have the solid foundation that is so necessary for good musicianship.

There are several things I can tell about you without even seeing you. You are musically inclined. You have chosen a brass instrument, you want to play it, and play it well. You have your own tastes in music, and you are "itching" to get at producing the sort of music you enjoy. You might well ask me how I can presume all this from where I sit, and I can answer that the simple fact that you are reading this shows not only what I have already said, but also that your interest and sincerity will help you in this new venture.

You might regard me as a friendly and sincere advisor, young enough to recall my own first faltering steps in the world of music, and old enough to draw on experience that has proved helpful to others such as yourself.

And now let me congratulate you on your decision to become a musician, a maker of music. It will likely be recorded in your life story as one of the finest decisions you ever made.The pleasures and benefits arising from participation in music are many. You will always be thankful for having had both the opportunity and the ambition to join those millions of happy people getting just a little bit more than normal out of life through their association with music.

When I say "millions" of happy people, I am not exaggerating in the least. All over the world there are literally millions of people, members of an international fraternity of music, who at one time were starting out more or less just as you are today. This fraternity is a loose-knit organization. It welcomes all ages, colors, and creeds. Professionals and amateurs are on equal footing, and it matters not if music is a man's profession or his hobby, so long as he is possessed in some way of an interest in the common denominator of music. This fraternity of music has no charter, it elects no officers nor does it hold any annual convention or

conference; it endorses no particular political philosophy, and yet some of the world's most foremost figures are enthusiastic members.

Such is the fraternity that bids you welcome. Travel where you may, you need never be lonely; your instrument is your goodwill ambassador. Be it in a strange city or a strange country, you will always be at home with musicians—fellow musicians—eager to meet you, to listen to your playing, to discuss music with you, and to open their hearts and their homes to you.

An elderly gentleman of my acquaintance carries his cornet and a collection of ensemble music with him wherever he travels, saying it is his surest way of making friends. Another, a commercial traveller, says his clarinet is an assurance that he need never be lonely when away from home. I recall moving once to a strange city where I knew one person, a brother. Within a week, I was playing in four bands, in addition to a symphony and a dance band; I was on speaking terms with well over a hundred people who might otherwise have remained strangers. Sitting in a cafe in Amsterdam, Holland one night, I was approached by the entire band of Dutch musicians. They had noticed my trumpet case and immediately came over to bid me welcome. What a fine evening we had! And this is only a sample of what you may expect to find in your journey through a musical lifetime.

Apart from the joy of playing—the thrill of exploring new music, the comradeship of fellow musicians — there is yet another rewarding feature. You are to do a great service! Yes, music is to be your means of serving those about you. And what a nice thought that is!

Just think! Once you can play—and that will not be long—people will be eager to listen to you. Your simple melodies will give pleasure to your family, your friends. You will be given the opportunity to entertain at house parties, at school concerts, at church gatherings. Wherever you play, you spread good feeling—you give enjoyment. Through this happy act you prove your usefulness. You become a better person and a better citizen!

Your study in music will be much like your study in school; you develop so much in one grade to prepare yourself for understanding in the next. There are to be times when the road will

seem a bit rough. You must console yourself with the thought that the final goal is more than worth the effort. All over the world students meet the same problems, and overcome them—just as you surely will.

Some of the finest musicians of a few years from now have not started yet—think of that now! You all have much the same chance. Will you use your opportunity to the best of your ability? Will you strive to become a good musician, a credit to yourself and your parents, and an asset to the musical world?

I wish you every success, and trust that my efforts in *Prelude to Brass Playing* will serve to get you started on the road to good musicianship.

Good luck to you!

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Chapter I

You and This Book

Prelude to Brass Playing is written with the express purpose of helping to fill a gap encountered by many brass-playing instrumentalists; this being the lack of introductory material leading to the first sound produced on an instrument.

The authors of many beginners' exercise books seem to take for granted that the student will be favored with the guidance of an able teacher. Consequently, they confine their advice to a minimum of rudimentary explanations. Unfortunately, however, there are vast numbers of students beginning each year without the advantage of teachers, especially in small communities and in the country. Common procedure is for the would-be player to buy the instrument of his choice (often without advice on this all-important matter), rush it home, and start blowing. He has one thought in mind—to play a tune right away!

A beginner's book will show him the valve fingerings, or the trombone-slide positions, and he is off. Should he be fortunate in having a "good ear," he will undoubtedly—by trial and error—succeed in producing a resemblance to a melody with which he is familiar. In most cases, the student is in such a hurry to further his melodic playing that he cannot be bothered with the exercises for development. And so, the book has been of little help.

While it is most regrettable that many students are obliged to start on their own, I feel that their chances of success may be greatly enlarged through a careful study of this book. "*Prelude to Brass Playing*" describes FIRST PRINCIPLES — what you should know *before you begin on the instrument.* You may be surprised to find, in later chapters, that you really do not simply "blow" a brass instrument! You do not jam the mouthpiece into the lips! You do not pull out valve slides carelessly! And so on.

You will recognize the fact that habits are formed early. The *first* time you pick up your instrument, you start to form habits. They will be either *good* habits, or *bad* habits—depending upon your approach. Skillful playing on a brass instrument stems from a series of *good* habits, poor playing, from a series of *bad* habits.

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It is unfortunate, but true, that bad habits seem the easiest to fall into; they wait at every turn for the unwary student. And they waste so much time – weeks, months, years. We see players starting over again after years of working the wrong way; it is harder to unlearn bad habits than to learn good ones.

So, STOP SHORT, and THINK! A few *weeks* of careful study *now* may save *years* of frustrating work *later.* A little patience at this most important stage—taking each step in its turn—attention to the formation of good habits, will make it not only possible, but inevitable that you will succeed in becoming an excellent player. While there might be a momentary thrill to stumbling through a melody now, there can be no real enjoyment, no sense of satisfaction unless you play reasonably well.

ENJOYMENT INCREASES IN DIRECT PROPORTION TO A PLAYER'S ABILITY! And so does earning power – a return for investment of TIME and MONEY.

Whether a person takes up painting or pie making, sculpture or psychology, a *solid foundation* is imperative to success. The highest degree of proficiency can be obtained from a solid foundation. A solid foundation means a PROPER BEGINNING. Without it, a player meets the depressing wall of no progress at some stage of the way.

Whether your choice is to be a concert player or a dance-band player, your first consideration must be study of the instrument itself. Both fields are equally exacting in their requirements of technique, tone, rhythmic essence, and understanding – *MAKE NO MISTAKE ABOUT THAT!*

"*Prelude to Brass Playing*" assumes you are reading this for a definite purpose, an honest wish to play an instrument. To play an instrument skilfully requires

PROPER ATTITUDE TOWARD PRACTICE! A CLEAR-CUT GOAL TO BE REACHED!

Proper Attitude Toward Practice

My greatest disappointments have been my most talented pupils! Their first steps came easy, and led them to believe that rules and religiously-followed regulations were not for them. The seeming short cuts, the ridiculous "royal road to learning" failed to

materialize, and they found themselves one day at a standstill—far below a standard at which they might have arrived.

So, you will see that a good pupil need not necessarily be a "natural." A good pupil is any person of average intelligence, with a sense of pitch and a sense of rhythm (and most of us have that) who will follow the rules to the last degree, confident that his teacher stresses laws for the sake of *PROFICIENCY* and *PROGRESS*. These laws are the results of years of study, research, consultation with top-flight musicians, and the experience of hundreds of pupils, both good and bad.

A Clear-cut Goal to be Reached

Your goal is the STANDARD set. Should your hobby be high jumping, you naturally try to jump eight feet to actually jump six feet. *YOU SET A HIGHER STANDARD THAN THE IMMEDIATE GOAL.*

There is no point or practical usefulness in setting a *low* standard. No person really wants to be a poor player. He may end up that through the wrong approach, a lack of application, or being satisfied with a low standard of musicianship. Of two players, he who aims for the mountain peak will surely go farther than the other who is satisfied with the first hilltop. The person satisfied with a low standard confines himself, not only to the grade of band or orchestra he may play with, but, more important, to the grade of music he may play. In order that you play in the company of good musicians, you must be proficient on your instrument. To perform the higher grades of music, be they concert or dance, you must be developed sufficiently to meet the demands of the music. No one wants to go on for the remainder of his playing days confined to grade-one music. And yet, how often have I seen a player of many years' experience fumbling through what could only be regarded as elementary.

I recall once holding auditions for band players. Good-paying jobs were offered, in return for the players' services at a weekly rehearsal and an occasional concert. Jobs were at a premium then, and I was besieged with applicants. To pick three men, I had to screen over twenty! The playing was pathetic. Most of the applicants had started on their own; with no understanding of sound

production on a brass instrument, they had taken what seemed the only way of getting notes. Substituting melodies for exercises, they had failed to develop on the many phases of technique; the result: a low standard of musicianship!

Don't let that happen to you! You never know but what your music may stand you in good stead one day. Socially, and financially, your music can be a friend and ally throughout your lifetime. YOU CAN PLAY and PLAY WELL! There need be no gamble at all! There is no need for doubt. In fact, you *must not* harbor any such disquieting thought!

When I get a pupil started on the right road—when I see him forming all good habits—I tell him he can go out and make a thousand-dollar bet that he will turn out an excellent player. It is only the person starting off in a haphazard, hurry-up fashion who needs worry about his chances of playing well. Anything worthwhile is worth working for. If you were not in love with the idea of making music, you would not be considering this. To succeed in any field of endeavor is only to set one's mind to it, and to stay with it. The rules are simple.

So, think now of the future, of the kind of player you would like to be. Know that the goal will be worth the effort, and sell yourself on the wonderful idea of becoming the "best darned player in the world"!

Chapter II

Breathing

Wind instruments are so named because they require the wind, i.e. breath, of the player to set the air of the instrument in motion. This vibration, in turn, generates the air waves which our ears perceive as sound. This subject will be treated later in more detail, so we will leave it now and take a look at wind instruments in general. They are divided into three classes:

(a) the "tube" type—flutes, recorders, fifes, tonettes, etc. which are played by directing the wind across an opening of the tube that brings about the necessary air vibration in the instrument;

(b) the "reed" type—

1.) "double-reed" (oboe, English horn, bassoon, bagpipe) and
"single-reed" (clarinets and saxophones) in which the reed or reeds, set in motion by blowing, cause the instrument's air column to vibrate

(c) the "brass" type (horn, trumpet, trombone, and tuba families plus cornet, bugle, post horn, etc.) in which the lips of the blower himself act as reeds.

Note: you will hear the term "wood wind" applied to classes (a) and (b) even though some of them—flutes and saxophones, for example—are made of metal.

You are about to become a brass-instrument player and, as such, will have different problems and pleasures than the players of the other wind instruments, but one thing you will share with them is the production and control of that vital force which generates your tone and even gives the over-all name to your kind of instrument. Yes, I mean (and how obvious can I get?) WIND.

Breathing is normally an unconscious function of life—its rhythm varying with our moods and physical activities. The emotion of anger will bring on hurried breathing, while quiet contemplation has the opposite effect; out-of-the-ordinary labor or exercise will induce an irregular and staccato series of breaths,

whereas ordinary activities automatically bring about a regular and smooth series.

"Normal" vs. "Natural" Breathing

Manner of breathing varies with the individual—some persons have the habit of breathing deeply, while others seldom take more than a shallow breath. Deep breathers being in the minority, shallow breathers may be said to breathe "normally." Since normal breathing is sufficient to sustain life, it is safe to say that the average person gives little, if any, thought to this function.

It is only where there be an occasion for drastic and prolonged change in the rhythm that serious attention is given to breathing. Some forms of athletics provide such an occasion—the study of elocution is such an occasion—vocal study is such an occasion—*WIND-INSTRUMENT STUDY IS SUCH AN OCCASION.* Yes, wherever there be a need for "breath control," breathing must become a conscious function!

Breath control, in wind-instrument playing, implies the ability to control breathing adequate to the demands of music. It is that stage of development at which a player breathes naturally and comfortably. He is able to meet each phrase as it comes—long or short. He takes a breath quickly, quietly, and unobtrusively. He plays in such a manner that breathing is not felt to be a handicap in the performance of music.

Normal breathing would make a poor foundation for the player working to develop mastery of a brass instrument. The breathing requirements for ordinary speech and mild activities would not be sufficient to sustain tone for any great length of time on one of our instruments. And so we are obliged (and luckily, too) to breathe *naturally.*

Naturally? Don't we all breathe naturally? Is not normal breathing natural? No, indeed! Natural breathing seems to be reserved for newborn infants and those people who are trained to breathe thus, such as athletes, elocutionists, singers, and wind instrumentalists. Watching a baby breathe you will note the tummy rising and falling with each breath—filling and emptying the lungs in this most important of all body functions. That is "natural" breathing! A look in the mirror at your own "normal" breathing will

show scarcely any rib movement at all. This is the result of shallow, upper-chest breathing, to which the average person of today appears to gravitate.

The man of olden times, who lived close to nature, who walked and ran through the forests, who had a minimum of physical comforts (as we know them), who continually breathed in fresh air—lived naturally, and breathed naturally.

Civilization, wonderful as it is, has robbed us of our birthright of natural breathing in that, with it, we have contracted improper methods and attitudes of walking, standing, and sitting. We "lounge" in soft easy chairs and chesterfields; we "slump" over a desk in schools and offices, we "sprawl" while watching television; we ride rather than walk any distance. The point is that our posture has suffered, and with it has gone our natural breathing.

Brass and Breath

You can do something about this! Yes, you can get back to healthful and natural breathing through your study on a brass instrument. If only from a health standpoint you will ever be thankful for having chosen an instrument that brought breathing to your attention. For, not only are you dependent upon breathing for life, but you are largely dependent upon good breathing habits for continued vitality and good health.

Statistics show wind instrumentalists to be, as a rule, long-lived. Doctors often recommend the study of a wind instrument as a means of building up a weak chest. Natural breathing develops strong lungs and strong abdominal muscles. Natural breathing promotes good circulation, good digestion, and an alert mental state. A report on health throughout American universities showed band players to have the greatest chest expansion—yes—ahead of athletes! It is not unusual for a student to increase his chest expansion from one to three inches through the natural breathing necessary to successful playing of his instrument. And so, wind-instrument playing is not only fun, it is healthy!

Common sense will have told you that the breath has an important role in the playing of a brass instrument, but it is doubtful that you realize the great extent to which your playing will depend upon it. Success on a brass instrument is so dependent upon

good breathing habits that some of the finest artists and teachers rate it as high as 40% of playing! Think of that--40%! You will see that breathing, insofar as brass playing is concerned, is not a matter to be taken lightly.

Know that good brass playing calls for good breath control—that good breath control depends upon good breathing habits. Give serious thought to your breathing so that, when the time comes to play music, you need not give it another thought – and *start now!*

Mechanics of Breathing

It is not considered necessary to go into full detail on the organs and muscles connected with breathing. There are, however, several significant facts to be borne in mind if you would suceed in developing proper breathing and breath control.

Chest formation is most important. Your chest is considerably larger *at the base* than at the top. The lower ribs are not fastened to the breast-bone; their forward ends are *free*. Do you see the significance behind these facts? Obviously the greatest expansion is possible at the *lower part* of the chest! Since our lungs occupy the whole chest area (except for the small space containing the heart), they, too, are largest at the base. Why then do people insist upon raising the shoulders when asked to take a deep breath? There is no logical answer; do not make this mistake.

Certain muscles play an active part in breathing. First is the diaphragm, a strong, flat, sheet-like muscle stretched across the base of the chest. Attached to the lower ribs, the backbone, and the breastbone, it separates the chest from the abdomen; it might be regarded as the floor of the chest and the roof of the abdomen. During inhalation, the diaphragm contracts, increases the size of the chest and lungs, and creates a vacuum into which air rushes.

The intercostal muscles are next to be considered. These are rib-moving muscles. They act involuntarily, yet we are able to exert a definite control over them. Take a breath now! Note that, by using these muscles, you may hold the ribs out for quite some time. You will later see the importance of this factor in controlling the breath. Keep it in mind!Everything depends upon these muscles in the act of inhaling. Without their aid, the lungs cannot ex-

pand. It is upon proper use and control of these muscles that the whole science of breath control depends.

Recall now the importance attached to good breathing habits. Read slowly and carefully. You will be shown how to attain the greatest degree of lung expansion, how to control breathing, how to develop the lungs and chest, and how to develop those all-important abdominal muscles. Have patience! This means much to you and to your success.

Our chief aim now is to bring into play the entire respiratory apparatus, every part of the lungs, every air cell, every respiratory muscle. To inhale the maximum amount of air, you must know how to fully expand the lungs and chest. You will recall the chest is largest at its base and that the lower ribs are free to move.

Now the diaphragm comes into play. From its normal, relaxed position—arched up into the chest—it automatically flattens, thereby increasing the capacity of the lungs. You can by an effort of the will, transform this into a semi-voluntary muscle. You can cause it to descend even lower than normal. While descending, the diaphragm exerts a gentle pressure on the abdominal muscles. This, pushing forward the front walls of the abdomen, will result in a pressure being felt against the belt buckle. Try it! This action of the diaphragm causes the lower part of the lungs to be filled; this is the first step.

The intercostal muscles come into play next, pushing out the lower ribs, breastbone, and chest. Since the diaphragm is attached to the lower ribs and the breastbone, it will be drawn down to an extent by this side-to-side and front-to-back expansion. The action of these muscles fills the middle part of the lungs. This is the second step.

The third and final step is to fill the higher portion of the lungs. The upper chest is *expanded*, thus lifting the rib cage. In this final movement, the lower abdomen will be slightly drawn in, giving the lungs a support and helping to fill the highest parts.

There you have the complete breath! Let us review the actions. The diaphragm, in contracting, enlarges the lung capacity in a *downwards* sense. The lower chest is expanded *outwards* (side-to-side and front-to-back). The upper chest is protruded, expanding the chest *upwards*. The lower abdomen is drawn in slightly

to give support. The advantages of taking a breath in this manner will be obvious. The chest is fully expanded in all directions, filling the lungs to maximum capacity. All respiratory muscles are brought into full play.

Analysis of a Breath

Before going on with the act of breathing out (in a controlled sense), let us be sure you have a clear idea of taking a complete breath:

Stand (or sit) erect, head up, shoulders relaxed. Place hands on lower ribs. Breathing through the nostrils, inhale steadily—filling out the lower part of the lungs first.

Remember now, the diaphragm is brought into play. Think *DOWN . . . DOWN . . . DOWN* — against the belt. Now fill the middle part of the lungs. Think . . . OUT . . . side-to-side . . . front-to-back. Now fill the upper portion. Think *UP . . . UP . . . UP* — expanding the chest and raising it. Remember, the lower abdomen is slightly drawn in. Blow out. Try this again and again.

While it might appear that this method of taking a breath consists of three distinctive movements, such is not the case. It is suggested thus only that you may have a guide to obtaining full chest and lung expansion.

In practicing the full breath, you might find it helpful to envision the filling of a bottle. . . *DOWN . . . OUTWARD . . . UP.*

As you find yourself getting onto the idea of this complete breath, strive to make the inhalation continuous. Try to expand the entire chest—from the lowered diaphragm to the highest point of the chest—with a continuous and uniform movement. Be sure of one point — *THE SHOULDERS DO NOT RAISE!*

Expiration

In expiration, the first air to be expelled results from a natural recoil. The lungs are made up of a spongy, elastic tissue, which will tend to spring back to normal position. The ribs, being springy, have a like tendency to spring back. These two recoils will, therefore, be the first actual force to come into play when breathing out.

The diaphragm is the next factor to be considered in breathing

out. Following a deep breath, it is stretched across the bottom of the chest, held out by the lower ribs, and pressing down upon the abdominal organs. It gives way, first, to the relaxation of the abdominal muscles, followed by the relaxation of the ribs.

This must not be thought of as a "let-go" feeling—an abandonment of effort. Think of the diaphragm as a partition that yields to opposing muscular forces—the lower ribs stretching it out, the abdominal muscles forcing it up from below. It is this *balanced resistance* that creates breath intensity (actually compressed air!). This is the predominating factor in breath control. This is the force that gives support to your tone, that gives life to your tone, that enables you to measure the flow of air, enabling you to swell and die away, to play on throughout lengthy phrases. This *is* breathing out!

When we wish to play forcibly, whether it be in a loud passage or to give added force to a note, these same respiratory muscles do the job for us. The abdominal muscles contract and push upward against the diaphragm; the intercostal muscles contract and move the ribs downward and to the back. This abnormal decrease in the chest volume causes the lungs to react with a more vigorous elastic recoil. Air is expelled more rapidly and more forcibly. Truly, here is your powerhouse! And here, as well, is an aid to high-note playing.

I suggest you read this again, very carefully. Visualize the action in your mind, then put the theory into practice.

You now have the method of taking in a complete breath and of breathing out in a controlled sense. It remains for you to master it perfectly. Do not be content with half learning. Stay with the practice until it becomes your usual method of breathing. Not only will this method of breathing contribute greatly to your success on the instrument, but it will do wonders to build up your physical condition. Take a chest measurement now, and check it again in six months. You will be pleasantly surprised!

To help you attain correct breathing habits and to build up the chest, lungs, and muscles, the following exercises are recommended.

(a) *Regulating the breath* (you will need a watch):
Stand erect. Place hands firmly on lower ribs, fingers across

waist front, tips resting on muscle just under breastbone. Inhale deeply. FILL the lungs! Timing yourself, blow out a small stream of air. There must not be any movement inward at first. The muscle under the finger tips (diaphragm) will recede first, still with lower ribs expanded. Finally, lower ribs give way for the end of expiration. How many seconds? 15? 20? Breathe correctly and try again. Add five seconds. Remember, no immediate movement in the region of the hands – keep those ribs out and diaphragm down. The longer you blow out, the longer before the diaphragm recedes. In 30 seconds of blowing out, try holding the diaphragm steady for 10 seconds, then allow ten seconds for it to recede, and the final ten seconds for lower ribs to return to normal. Keep adding five seconds each time. You can get this up to 60 . . . 70 . . . 80 . . . 90 . . . 100 seconds and over by exerting will power. Will power can be your greatest ally in music study. Right here is where you start to exert it.

Go at this practice with a vengeance. Don't be satisfied until you are over the 100-second mark. It is a good idea to always start with 10 seconds, adding five seconds with each successive breath. Thus you will get the idea of regulating the flow of air. I suggest you start off with a smaller breath than the complete one we have been studying; so much is not required for only 10 seconds of blowing out. Be sure, however, that you distribute air to all parts of the lungs as you do a full breath! Some students experience a bit of difficulty in expanding the back ribs. Try this. Sit on a straightback chair. As you inhale, concentrate on pressing the lower ribs back against the chair. A little practice and you will find this easy!

(b) *Strengthening the respiratory muscles and the lungs:*
Stand erect. Inhale a full breath. Hold the air for two or three seconds. Blow out vigorously through the mouth. This is a wonderful exercise for ventilating and cleansing the lungs.

(c) *Gaining chest expansion:*
Stand with legs well apart. Allow yourself to slump well forward, with crossed hands. Blow out completely, scissoring arms together to help deflate the lungs. Now, straighten up smartly – flinging arms up and out – while inhaling deeply.

Continue to suck in air as you stretch the arms to either side . . . out . . . out – as though to touch the walls of the room. Slowly resume slump position, blowing out steadily. Scissor arms to expel air, and repeat.

Variation of this exercise: Stand erect. Inhale a full breath. Retain the air. Extend both arms forward and bring the clenched fists together at shoulder level. Swing the fists back vigorously until the arms are out straight sideways from the shoulders. Back to forward postion. Repeat several times. Blow out through the mouth. Rest. Repeat.

(d) *Walking exercise:*

Walk with head up and shoulders back – think of getting the shoulder blades together. Inhale a full breath, counting to eight – one count to each step. Exhale through the nostrils, counting as before: 1,2,3,4,5,6,7,8, –one count to each step. Rest four steps between breaths and continue as before, adding a count each time. A fine exercise for developing lungs and chest can be found in swimming, particularly under water. Next time there is a contest to see who can stay under the longest, try this:

Just before diving in, breathe *rapidly* and *deeply*. Holding your breath then, it will be longer before the carbon dioxide reaches the critical level inititing respiration – longer before you need another breath. Try it! Strive for a better record each time.

(e) *Exercising the abdominal muscles:*

Lie flat on your back, feet together, toes pointed, arms at the sides with hands flat on the floor beneath you. Inhale deeply. SLOWLY raise stiffened legs, blowing out steadily. Inhale again and SLOWLY lower legs, keeping toes pointed and blowing out steadily. Rest and continue. Keep adding to the number as your muscles develop. Add your own variations. One good one – raise legs till heels are just clear of the floor. Spread the legs wide. Raise and lower legs from this spread position, breathing as before.

(f) *A Strenuous exercise* (not to be attempted until the abdominal muscles are well developed):

Sit on a bench. Hook toes under bed or bureau. Fold arms

across chest. Inhale deeply. Keeping shoulders straight and chin tucked in, go SLOWLY back, until head brushes the floor; meanwhile, blow out steadily. Inhale and SLOWLY resume sitting position. Rest and repeat. You must not overdo this exercise.

Make these exercises part of your daily routine. You will be well rewarded, both physically and musically.

One final word regarding inhalation when playing a brass instrument. While nose breathing is undoubtedly the natural way to inhale (and the way I hope you normally breathe), it is not conducive to speedy inhalation. The nose is a filter, and consequently we are not able to take a deep breath as quickly as we may through the mouth. Therefore, when playing your instrument, you are advised to take your breath through the mouth—quickly and quietly.

Breath Practice Routine

The ability to breathe in and out correctly is the first step in acquiring breath control. Now, while you may easily get onto this method in your first week of practice, acquiring the firm habit will take a good deal longer. You will breathe thus only when you make breathing a conscious effort. How many times each day will that be? And how many times each day will you breathe normally? The solution lies in making yourself conscious of breathing as often as you possibly can.

Five minutes of deep-breathing practice will make a good start for the day. A few minutes thought to controlling the breath as you walk down the street, will add to the habit. The time necessary to go through exercise (a), before practice, will send you into work – breath consciousness. Breathing and abdominal exercises before going to bed will make you sleep better. And now, a point: you will forget at times! Yes, you are apt to go days without ever giving a thought to breathing. And so, you need a reminder. You need something to bring the thought to mind. There any number of things you can do: a "breath-control" banner on the wall of your practice room, a notation in your study book, a small "B" printed on the palm of your hand—anything, so long as it reminds you of breathing. The end justifies the means!

Before going on to breathing habits in your music studies, I wish

to make one point clear. *BREATHING MUST NOT BE CONSIDERED A HANDICAP IN THE PLAYING OF MUSIC.* We must not make excuses or apologies for the fact that our playing is dependent upon breathing. Only the player too lazy to develop breath control falls back on this feeble excuse to justify his inability on the instrument. We must not feel sorry for ourselves when we see the violinist, the pianist, playing on and on, seemingly without end. Their music is our music; it is made up of phrases, sentences and paragraphs. Where they "lower the voice" at the end of phrases and sentences, we breathe!

Applying Breath to Music

Your first exercise book will probably start off with whole-note studies, where you breathe after each note, four beats. That presents little difficulty, and you will soon feel quite comfortable on such "phrasing." Then you will advance to two whole notes with each breath, eight beats. A while of this and you will find yourself managing without strain. Continued work, concentration upon breathing, and you will progress to four-bar phrasing. And so it goes. Here, as in other phases of playing, you keep developing to meet the demands of the music.

I recall looking at my first eight-bar phrasing exercises. There was a breath mark at the end of each eight bars, and I was instructed to breathe *there only.* "Who, me?" I thought. At first I didn't make it. More practice, concentration on doling out the breath, and I *did* make it, almost in a state of collapse! Pressure in the chest and strain on the abdominal muscles was terrific! Staying with it, however, these exercises became gradually easier to me. Finally, I was able to manage them at a slower tempo than was called for, and without strain. I recall, too, looking at exercises considerably ahead – exercises that called for one whole page to be played in one breath. Strangely enough, they didn't frighten me at all. I could see that they would come the same way – with "staying at it."

And now, let us get on to breathing habits in your music practice. Start, from the beginning, to *tax your breathing.* Should the exercises call for a breath after each four beats, count very, very slowly. If the speed called for is for 60 quarter notes to the minute, slow it down to 48 per minute. Each time you play an exercise, try

playing more of it with one breath; always make breathing harder for yourself, never easier! That is the sure way to develop!

Stay on these exercises, over and over again, until you are comfortable in breathing. Then set your mark at *eight* slow beats. Remember, each breath must be a good one! Your last phrase must be as easily played as the first; you must feel as free from strain at the end of the exercise as when you begin.

Too often have I seen a student start off with a deep breath, enabling him to play through the first phrase easily, then start to falter in the second phrase, snatch a breath in the middle of the third phrase (hoping I wouldn't notice), and finally snatch breaths all over the place, thus completely ruining a musical performance.

Don't be careless in this regard. Carelessness wastes time, and limits your chances of playing well. As you come to the end of a phrase, think; take a sufficiently deep breath to get you easily through the next phrase. Then you will never experience that labored feeling from trying to reach the end of a phrase with too little breath and the resultant lack of breath intensity.

As to breathing places in your music, it is not possible to give definite rules. In most beginners' books, you will be safe in breathing after every second or fourth bar. This, however, is only a guide, and you are advised to look carefully through each exercise for breathing instructions. Should your book fail to show breathing places, I suggest you mark them in yourself – a comma (') written above the staff.

Always check breathing places before you start to play; know where you are going to "phrase." Don't make the mistake of leaving this to chance. It is all-important!

Cultivate the habit of taking a breath *immediately on completion of a phrase.* Time your inspiration to the number of beats occupied by the rest, so that it is completed just as the next phrase is due to start. The act of taking a breath will become part of the rhythm of the music, and not merely a gasp as the phrase is about to begin. Pay close attention to this point!

BREATHING FOR YOUR PLAYING IS AN ART; TREAT IT AS SUCH. WORK TO PERFECT IT AS LONG AS YOU PLAY A BRASS INSTRUMENT!

Chapter III

Embouchure Training

Embouchure (pronounced *OM-boo-shoor*) refers to the formation of the lips and the muscles around the mouth used to regulate the pitch (height or depth) of musical sounds on a wind instrument.

It becomes a common term in every brass player's vocabulary. We hear the expressions "fine embouchure," "weak embouchure," "strong embouchure," etc. used in reference to individual ability to perform on an instrument. A "fine embouchure" will imply the highest degree of flexibility, while "strong" and "weak" suggest stages of development.

Embouchure development must be regarded as the *most important single phase* of brass playing! Your degree of success will depend for the most part on your embrochure training. Just as the violinist must *make* his notes, so must you. He depends on ear and fingers. You depend on ear and embouchure. Your playing can be only as good as your embouchure. Be sure you go into the training with a clear understanding of every factor relating to the production of sound on your instrument. *I SUGGEST YOU READ SLOWLY AND WITH ATTENTION.*

Sound in General

First, let us see what causes us to experience the sensation of sound. Some object is, by some agency, thrown into a state of vibration. It communicates its vibrations to the air about it. The vibrations strike upon our ear drums, and we *hear*. Vibration may be easily understood by considering the violin string upon being plucked. From a straight line, it bulges slightly to one side, back to straight, bulges to the other side, and back to straight. This is one complete vibration (sometimes referred to as a double vibration). The *vibrating agent* here is the violin string.

In the case of a brass player, the *lips* act as vibrating agent. By blowing, we set the lips in vibration, they communicate vibrations to the air column in the instrument, and sound results. In

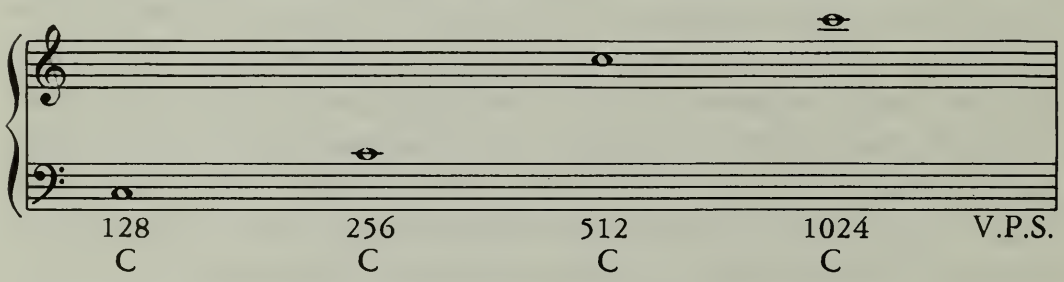
actuality, the vibrating of the lips might better be likened to the action of a double reed as used by, for instance, the oboe, where the player sets the two reeds in vibration by blowing. The violin example is used only that you may find it easier to visualize a string moving back and forth than the action of two reeds in a player's mouth.

Frequency

The pitch of sound is determined by the frequency of its vibrations, i.e., the number of vibrations per second necessary to produce that sound. Slowly succeeding vibrations cause what we call "low" sounds. Rapidly succeeding vibrations cause what we call "high" sounds.

Each musical sound has its own frequency of vibrations, called its "absolute pitch." For instance, the note "middle C"—on the line midway between the bass and treble staves—calls for a frequency of 256 vibrations per second.* Whether two pieces of steel bang together causing surrounding air to vibrate at that frequency, or whether our lips vibrate at that frequency, middle C will be heard. Descending from this C, the notes will have a successively lower frequency, while the ascending notes will have a higher frequency.

Here is one easily remembered fact. Octaves (C to C, D to D, etc.) double on themselves. The C one octave below middle C has a frequency of 128 vibrations per second (V.P.S.). The C one octave above middle C has a frequency of 512 V.P.S.; the next higher has 1024 V.P.S., and so on.



The term "A-440," as mentioned later in connection with tuning the instrument, refers to the frequency of that note as adopted

*The numbers of vibrations used here are called "philosophical"; they are approximate numbers that have been adopted because of ease in calculation.

almost all over the world, and so is called "Standard Pitch." "Vibration frequency" is a common term and one you will wish to add to your musical vocabulary.

Embouchure or Valves, Slide?

The layman, looking at a valve instrument or slide trombone, probably imagines that notes are obtained simply by moving valves or slide and blowing. We will find, however, that a change of valves or slide does nothing more than *make available* another bugle-like series of notes. It is for the lips, aided by our ear, to regulate and control the rate of vibrations necessary to produce the note or notes desired. While highly improbable, it would be quite possible for a player to have the correct fingering or slide positions for a hundred notes and for him to play a hundred notes higher or lower than the ones intended.

It is apparent that embouchure *does* play an all-important part in the playing of a brass instrument. Our lips and ear must be trained to the point that we can strike each and every note "right on the nose." There can be no guesswork, and there need be none, if we start right, stay with it, and have the good sense to know that training of any kind must follow its own course.

The know-how of embouchure is a simple thing, since the rules follow from natural phenomena, but the development—that is where the patience comes in! Most people in this world will work hard at anything that is important, that they consider is worth the effort. You must feel that becoming the musician of your dreams *is* worth the effort.

Having spoken of vibrations that produce sound, vibrating agents, frequency of vibrations, etc., let us see how all these are to apply to the playing of a brass instrument. Our lips act as vibrating agent; we set them in a state of vibration by blowing against them. When vibrating slowly, they will produce "low" sounds. When vibrating rapidly, they will produce "high" sounds. In this respect they might be likened to a violin string (the longer the string, the slower the rate of vibrations). Wishing a higher note on one string, the violinist presses the string onto the fingerboard, thus shortening its vibrating length to give the pitch desired.

Considering the lips as being of a vibrating length, they too will be subject to the principle of shortening and lengthening to pro-

duce high and low sounds. The amount of lip vibrating will depend upon the frequency required. A low note will call for more of the lip to vibrate than a high note. This is one reason for large deep-toned instruments having large mouthpieces. The low notes of their register call for such a great portion of the lips to vibrate.

If I seem to be taking a roundabout way to the start of embouchure training, it is with a definite purpose in mind. It is hoped you will realize by now that the production of sound on your instrument follows the rules of nature. As in most actions involving technical training, there is a "natural" and an "unnatural" method of producing sound on a brass instrument. I feel obligated to point out the disadvantages of "unnatural" playing as I have observed in hundreds of players.

You have possibly heard someone remark that, no matter how hard he blew, he was unable to get a sound on a brass instrument. The answer you know – there were no vibrations! Wind went through the instrument well enough, but the lips did not vibrate, and so the only sound would be one of rushing air. How, then, are we to set the lips in vibration?

Perils of Pressure

Imagine now that this same person on his second attempt was to succeed in producing a tone! What has he done so differently this second time? He *pressed* the mouthpiece into the soft portion of the lips, *forcing* them to vibrate! And, should he try again, only pressing harder, he might sound a higher note or, with less pressure, a lower note.

This would seem the simplest and quickest system for obtaining the notes on a brass instrument: more pressure of the mouthpiece on lips for high notes, less pressure for low notes. And, since it seems human nature to follow the line of least resistance, we find the average player who is obliged to start on his own adopting this PRESSURE system of playing.

This I term the "unnatural" method of producing sound. With only the advantage of a "quick start," let me point out the disadvantages of "strong-arm" playing as I have seen them.

FAULTY INTONATION (playing out of tune) is the most common failing of this player. He has a tendency to depend upon the valves or trombone slide for correct pitch, and consequently is inclined to move sloppily up or down to notes instead of striking in the center of the intended pitch. Too, the lips are so very sensi-

tive that the *slightest* change of pressure will cause the tone to sharpen or flatten, and we find this player's intonation "wandering."

WEAK LOW REGISTER: continued pressure of the mouthpiece causes the lips to swell or thicken to the point they will not vibrate at the frequency required in the low register. Tone in this register is usually "windy," and we find the player avoiding bottom notes.

COARSE EXECUTION: seldom do we find this player able to perform delicately. His staccato notes (short, detached) are apt to have a sharp, ragged edge instead of being light and round as a bubble. The player usually confines himself to very sharp staccato (staccatissimo) and, on the other hand, legato (smooth) playing where, by continued pressure of the mouthpiece, he may keep his tone going.

BLIND NOTES: I refer to notes that fail to sound out; common in soft passages, particularly where there be some distance between notes. For delicate playing, the lips must be free, supple, easily adjusted. Heavy mouthpiece pressure *kills* freedom, thus confining the player.

UNEVEN SLURRING: referring to passages joined by a curved line, in which only the first note is tongued and the notes are to flow smoothly. Here, pressure is not to be depended on, particularly where the interval is considered wide or where there be no valve or slide change. The player is inclined to believe that a valve or slide change relieves the necessity of adjusting embouchure and thus fails to get a smooth, flowing sound to many of his slurs. Here, as well, we find pitch suffering greatly.

SPLIT NOTES: I refer to the instance where the player attacks a note, then flies off at a tangent, ending either higher or lower than the intended note. This most commonly occurs in the upper register, with the player depending on his ear and a certain amount of guesswork to determine the amount of pressure for the note. In this register the harmonics lie so close together that there can be no guesswork; freedom of the lip is most essential.

NUMB LIPS: continued pressure on any part of the body will cut off circulation after a time, and the lips are no exception. They become numb, and the player loses his "feeling" for notes. It is at this stage that he encounters most difficulty should the music call for delicate execution, low notes, lip slurs.

DAMAGE TO THE LIPS: this is a point that must be considered. Years of playing with extreme pressure on delicate tissues of the lips will, in many cases, result in corns similar to those that come from wearing too tight shoes.

The majority of "pressure players" with whom I have been in contact have been obliged to start on their own. Without the advice and guidance of a teacher, they took what seemed to them the only way of producing notes. In their hurry to "play" the instrument, they substituted tunes for exercises, joined the town-band as soon as they were able to get a few notes, and depended on those players around them (who probably started the same way) for tuition.

One young man, who had been playing ten years, remarked that he would welcome the opportunity to warn every beginner on a brass instrument of the pitfalls he encountered. Starting at the age of eleven, with considerable natural talent, he progressed quite rapidly on his own. Within two years he was playing one night a week in a dance band. Using the pressure system, he developed his playing over the years to meet the casual demands of a small-town band, and was considered locally as being quite a good player. By this time, however, a corn had formed on his lip. He also realized that his playing had been at a standstill for some time.

That there are pressure players who have developed some phases of their playing to a remarkable degree, I readily admit, but never have I heard of one who was proficient in *all* phases. I am in complete sympathy with students who do not have the opportunity to study with a teacher, and have listed the disadvantages of heavy-pressure playing as much for the benefit of frustrated players who may chance upon this booklet (and who may possibly find a remedy) as for a warning to the beginner.

Before going on, I should like to clarify my stand as regards "pressure playing." The type of playing referred to above —"strong-arm" playing, "heavy-pressure" playing, the substituting of pressure for muscular development—this I lament, and condemn! Pressure, there will be, but not the extreme pressure that causes lips to swell—interfering with good all-round playing—not the pressure that threatens to damage the tissues of the lips. The pressure of mouthpiece on lips should be only slight; so slight that there will be no imprint of the cup on your lips after playing,

a slight, but firm, pressure that will allow for fusion of lips and mouthpiece!

The NATURAL method for playing a brass instrument boils down to the following points:

(a) FLEXIBILITY OF THE LIPS
(b) STRENGTH OF FACIAL MUSCLES ABOUT THE MOUTH, CHIN, AND JAWS
(c) EDUCATION AND DEVELOPMENT OF THE TONGUE
(d) POWER FROM THE DIAPHRAGM.

There are no tricks to this method, nor are there any short cuts. The rules are dictated by common sense; they follow only the principles governing sound production. Lip vibrations produce sound; the lips, then, must be brought to a soft, pliant, vibrant state whereby they may be easily controlled and regulated. Control comes with development, training, and co-ordination of the many sets of muscles going to make up embouchure.The tongue, one minute flicking lightly, the next caressing gently, and so on, must be trained for accuracy, developed for strength. The power for brilliant tone, for endurance, must come from the only source — the "powerhouse."

And so, we arrive at the *approach* to embouchure training.The whole method of natural playing depends upon your attitude, your work, this next few weeks. This is where you "make or break." This is where the patience comes in!

You are going to learn how to produce a sound—a good sound! Once that is accomplished, you are on your way; you have the foundation upon which to build successful brass playing. You have heard the expression "Well begun is half done." Keep that in mind!

The course ahead is set out in three steps: "Preparing the Lips." "Mouthpiece Practice," and "Instrument Practice." Follow each step carefully. Read for complete understanding, and work hard. Results will be certain!

Chapter IV

Embouchure Training

1st Week — PREPARING THE LIPS

While you may regard your lips as being already soft and pliant, insofar as the state necessary for brass playing is concerned, they are stiff as a board! A little experiment will prove the point.

Close your lips firmly and blow a stream of air through them. Was there any sound other than rushing air? Unless you have phenomenal extraordinary softness of the lips, no! And, were you to blow into an instrument in this manner, there would be no sound (unless you were to press the mouthpiece into the lips and force them to vibrate, which we are to avoid). This state of nonvibrant lip condition may be likened to a too stiff clarinet reed, which will not vibrate on emission of the player's breath. In this instance, we see the frustrated player blowing furiously in vain attempts to produce clear sounds. This accounts for the reed player's never-ending search for reeds that will vibrate easily and with good tone.

In this respect, you are lucky. Once you have your lips to the easily-vibrating stage, they will remain in that condition through rightful practice habits. You need not be envious of the reed player who buys his vibrating agent at a music shop.

Normally speaking, our lips *are* soft, and respond easily to the muscles about the mouth when we speak, smile, etc. Vibrant they actually are, too, but since there is no call in our everyday life for lip vibrations, it will be necessary for us to induce in them that state of looseness.

Suppose now that we consider the length of lips as being composed of (say) 10,000 portions of tissue that *will vibrate*, providing we loosen them through proper training. We know that any loosening-up training must be gone about in an easy, unhurried manner, allowing Nature to take its own course. The baseball pitcher at spring training camp lobs the ball easily to the catcher; the runner jogs easily around the track. Since tension must be avoided in any action involving speed or ease, the drummer working to speed up his roll is told to relax; the dancing student who

moves stiffly and awkwardly is advised to loosen up, and so on. It is a well-known fact that the ability to move quickly, easily, and surely depends on the loosening-up of muscles, tendons, etc.

Knowing that sound on your instrument is dependent on lip vibrations, that lips must be loosened up before they will vibrate naturally, that Nature must take its own course in this training, will you spend one week—a full seven days—on this all-important phase? There will be no need for your instrument during this period of training, so put it away and concentrate on the job at hand. You are to get the lips vibrating easily, so that when you do pick up your instrument and blow against the lips, they will respond by giving you sound—naturally and easily.

Loosening

Here is the way to go about loosening up the lips. Wet them (they will vibrate more easily), and close the mouth. The corners must be *firm* to give resistance to the lip length you are about to blow against. Caution here! Do not stretch the lips, but close the mouth naturally. The slight tension necessary to make the corners firm will cause a puckering of the center portion of the lips. Starting with a deep breath, blow a small stream through the firmly closed lips until you are out of wind. Another deep breath now and repeat as before.

A few seconds can scarcely be expected to produce loosening, so stay with the practice and keep in mind what you have to do. This is a good opportunity to work on correct breathing as well. I suggest you keep your hands on the lower ribs to check on rib and diaphragm movement.

It would be a good idea to review this chapter and the chapter dealing with breathing while you are doing this practice, since a person will always do a better job with an understanding of not only the *manner* of performing but also the *reason* for doing it. Just imagine you are going to explain in detail to some friend the natural method of producing sound on a brass instrument.

Buzzing

Your first experience of lip vibrations will be a tickling sensa-

tion coupled with a light buzzing sound. This may last only a second, but it is the start. It may come after fifty repetitions of blowing, it may be after seventy, or could be after a hundred. It will depend on the natural condition of your lips. The point is, they *will* vibrate eventually, so stay with it! When some portions of the lips have started to vibrate, think of the other portions that are so far resisting vibration. First you will get only a few of the ultimate 10,000 portions vibrating, then it will be eighty, a hundred, five hundred, and so on. You may find that daily application of vaseline or cocoa butter will help to loosen the lips.

When you have a considerable length of the lips vibrating (sounding like a fly on the windowpane), time yourself with a watch. A good deep breath now, and see how many seconds you are able to keep the lips vibrating. Possibly you will manage seven to ten seconds. If more, good for you! Tomorrow and the next day you will steadily increase the vibrating time. Why? Because there will be more portions vibrating, and so *less resistance.*

Another point to bear in mind, now and always, is that the more portions of the lips vibrating, the less wind in your tone! You see, wind goes into the instrument only through portions of the lips that are *not* vibrating. Also, that wind is escaping and being wasted! Our wind is only to set the lips in motion, not to fill the instrument, which is already full of air.

You are forging steadily ahead now. Stay with it and increase the vibrating time to thirty, forty, fifty seconds, and more. It is quite possible. Think what that will mean to you — one breath causing vibrations that will give sixty seconds of tone on your instrument! Think, too, of the steadily lessening effort to you.

There is a natural evolution in the preparation of the lips. First you blow and there is no sound other than rushing air. Then a few portions of the lips loosen and start to vibrate, cut out, and vibrate again. Next, the vibrations become fairly steady and you have the fly-on-the-windowpane sound. Finally, there is the quickening and evening out of vibrations until they blend into a natural, musical sound.

At this point, try an experiment. While producing this musical sound (which, incidentally, is going to give you a very natural

sound on your instrument), press gently on the corners or on one corner of the lips. Do you hear the slightly higher sound? Just as the violinists shortens the vibrating length of a string for a higher sound, so have you shortened the vibrating length of your lips. And there you have demonstrated to yourself the principle, not only of producing sound but of changing pitch as well. Think about this principle now! For your low notes you will have a considerable length of the lips vibrating, and less vibrating as you ascend. Obviously, you will not use a finger to shorten the vibrating length (as in the experiment).

Articulation (Tonguing)

Before going on with the procedure for changing pitch, we must introduce articulation; this refers to the movement of the tongue in the production of a tone, and must be regarded as another very important phase of playing. The tongue might be likened to the violinist's bow, in that we use it to start our notes, and, by using various degrees of force, to express different moods in the music we play. It would indeed be sad were we to have just one degree of force in our tonguing. Should it be very mild, as we might expect in music depicting sentiment, then we should be limited to music of that type. Imagine trying to obtain the effect of excitement, of battle, of a dance such as the minuet or a South American rhumba, using an articulation designed only to denote smoothness. It would be impossible!

The tongue is a muscle, capable of great strength and the most rapid motion. Like any other muscle at our command, it may be developed and trained to do a job. Development calls for the muscle to be worked till tired, and then rested. Training the tongue for brass playing involves the use of various syllables—over and over—until the action is performed instinctively.

Your study book will introduce the various articulation syllables as you go along. You will do well to give each and every one your utmost attention. You cannot play without having articulations "at your finger tips," which is to say, so much down to habit that you perform them without thought.

Here we shall deal with what I call *ordinary* tonguing—definite without being the sharpness of an accent, smooth without being the supersmoothness of legato.

Think now of the syllable "TOO." Say it over many times, concentrating on the tongue action. For the "T" of the syllable, the tongue tip touches the back of the upper teeth. Flicking back, it becomes "TOO" in keeping the air directed at the lips. Note the expression, "flicking back"! I want you to think of the tongue as a *thin, pointed rapier* that will *dart, flick* —easily, lightly, and lightning-like; up-and-down, not to-and-fro.

Do it wrong now, for experiment. Place the tongue between the lips and you will get "THU." The point I would have you observe here is that, with this *wrong* method, the tongue action moves the lips, and, in so doing, interferes with their all-important function; it will also hinder the tongue's velocity. AVOID THIS MANNER OF TONGUING! The only exception (I repeat, the *only* exception) in this regard will be players of what are referred to as the larger instruments, and they only in their low register. Here the opening in the lips is considerable and the tip of the tongue through can do no harm.

Since I have throughout this work suggested phases as being of various degrees of importance, it might be well here to list what I consider to be the most important phases for you to keep in mind and work on. Here they are, the BIG THREE! WIND CONTROL, EMBOUCHURE, ARTICULATION. To save argument, you might consider these as being equal in importance and each a definite *must* if you would succeed in becoming an all-round good player.

Application of Articulation

Now, let us start to use the tongue in practice. Set your lips as before (firm at the corners),—wetting them first. Place the *tip* of the tongue lightly behind the upper teeth as for "T." Flick it back and down. I say *down*, since you do not want it to interfere with the flow of air; it would affect tone on your instrument. Besides, the natural resting place for the tongue is behind the lower teeth. The buzzing sound that you have developed should result *immediately.*

There you have the method for *starting* a note! The emphasis here is for good reason. Some students are inclined to think that the tongue "makes" the note, and fail to set the embouchure. You

make the note, and the tongue acts as a valve to release the air and to divide one note from another. You could produce a note by saying "HOH," provided your lips were set properly. Keep this fact in mind!

Check now before a mirror and watch for this point—THERE MUST BE NO MOVEMENT WHATSOEVER AROUND THE MOUTH AS YOU TONGUE! Any change of the muscles as you tongue—or after—will result in a distortion of sound. Any interference with the lip formation by the tongue would be the same as a violinist having his arm jarred as he started to play a note. Keep checking before a mirror now! Take no chances! From this point on, TONGUE EVERY NOTE.

Your practice now will follow this plan:

(a) An erect position of the body, either standing or sitting;
(b) A deep breath, taken properly;
(c) Form the embouchure (corners firm, center soft);
(d) Tongue "TOO" and sustain the note, watching lips in mirror;
(e) LISTEN carefully to the sound, and try to smooth out the vibrations.

Pitch

Now we return to the method of changing pitch. You will recall that we likened the length of vibrating lip to the length of a violin string. As the violinist shortens the vibrating length of a string for a higher sound, so do you shorten the vibrating length of your lips for a higher sound. For your low notes you will have a considerable length of lips vibrating, and less vibrating as you ascend. You will control this length by muscles around the mouth and lower face.

Stand before the mirror now, and follow the action as you tighten and loosen the muscles about the mouth. Obviously, all tightening depends on a firmness at the corners; to tighten otherwise would be impossible. If you will think of these firm corners as being a double winch, which may be tightened or loosened to vary muscle tension, you will soon get onto the idea of changing pitch. By tightening, the lower lip is pressed more firmly against the upper lip; the vibrating length is shortened, and a higher note results. And so, the simple rule: FOR A HIGHER NOTE, YOU WILL

TIGHTEN (CONTRACT); FOR A LOWER NOTE, YOU WILL LOOSEN (RELAX).

Your practice now will consist of buzzing notes of different pitch. Start with a deep breath, taken correctly, and keep the sound going as many seconds as you possibly can—40, 50, 60, and more. This will depend upon the degree of looseness of the lips, so do not let up on this part of the training. Remember, your ability to produce higher notes will depend greatly upon the portions that you can get to vibrate!

One point to keep in mind when buzzing different notes: make the muscle adjustment of lips *before* you tongue. You want to be always "set" for a note before making the attack.

You have before now probably experienced an aching feeling at the corners of the mouth. That is good! It means you are using muscles, and have started the development of those muscles that play such a great part in obtaining and sustaining notes for you.

The important point to remember in connection with the training and development of these muscles is that you must REST OFTEN. It is in the rest after using muscles that the development comes in. Keep this in mind throughout your playing days!

Stay with this work for a full week. The lips are stiff to begin with and cannot be expected to loosen up the first day or two. Have patience. This is the work that will ensure a solid foundation: the work that may mean the difference between success and failure!

Chapter V

Embouchure Training

2nd Week — MOUTHPIECE PRACTICE

The mouthpiece is to be seen as the "speaking" part of a brass instrument. By it the player exercises direct control over the volume, the pitch, and the quality of tone. Range and quality of the notes produced from a particular instrument are greatly affected by the shape of the cup. The cup of a trumpet mouthpiece is hemispherical; that of the horn, funnel-shaped; and that of the trombone and other brass instruments, intermediate between these extremes.

Until recent years, mouthpieces for each particular instrument varied little in shape. One trombone mouthpiece looked much like another; trumpet, the same; and so on. Then with experimentation came changes in rims and cups. Manufacturers vied with one another in catering to personal tastes. Mouthpiece business became big business. Now, for each instrument, we have any number of different sizes and shapes.

Rims vary from flat, to rounding-flat, to wide-cushion. Cups take all manner of shapes, ranging from deep to shallow, even to double-cup. Mouthpiece ads proclaim any number of advantages, such as high-note ease, greater endurance, better tone, etc.

It is natural then that keen attention has been brought to the mouthpiece. In some respects, this is good! Players desiring certain effects in tone, such as mellow, broad, piercing, etc., choose a cup that will tend to affect their tone correspondingly. High-note dance trumpeters, worrying little about the bottom register, choose a shallow cup that makes the upper harmonics easier to produce. And so on.

In another respect this attention has been most harmful. Many players have developed a phobia—"mouthpiece-itis"! They are continually buying mouthpieces. Their search goes on year-in-year-out for a mouthpiece that will end all their worries and difficulties. They really believe, and some advertisements help them in this, that there is a mouthpiece that will almost overnight transform them from a mediocre to an excellent player.

There is no doubt that mouthpiece has a bearing on range and tone. And I am a firm believer in each player's having a mouthpiece that suits him; that is to say, a mouthpiece that suits his type of playing. But as for mouthpiece providing a short cut to playing ability . . . never! Ability on a brass instrument always has, and always will depend, not on the mouthpiece, not on the instrument, but on the player himself.

I hope, if you play cornet, trumpet, or trombone, you have not followed what seems a common trend, namely, buying a mouthpiece that will help in getting high notes easily. You may be sure that any mouthpiece designed to help you in this respect will, of a certainty, *rob you in another!*

For the beginner, I also advise against the wide, cushion rim. A rounding-flat rim tends to promote more delicate control. As for the cup, a medium size is to be preferred to a shallow cup. With the quality of tone definitely dependent on the inner shape of your mouthpiece, you want a "tone chamber" to start with.

It is probable that the mouthpiece that came with your instrument more or less meets these suggested points; instrument manufacturers seldom, if ever, go to extremes on their "stock" mouthpieces. Leave personal choice until such time as you may secure expert advice in this regard. Concentrate on the work at hand, focusing attention not on the mouthpiece, but on the lips.

Position of Mouthpiece

And now, position of the mouthpiece on the lips. Slow! Caution! Red light ahead! This is the step that can spell success or failure. Take no chances!

First in this step is finding the vibrating center of the lips. *Vibrating center!* I should like to say that this will always be found in the center of the lips, which is the logical place. But, as with many rules, there are to be exceptions; 99 out of 100 players will have their vibrating center directly in the center of the lips, the other one may find his to be slightly off center—to one side or the other.

You should have no trouble in locating the vibrating center of your lips. Provided you have worked conscientiously this past week on the loosening process, a glance in the mirror as you buzz the

lips will show the natural vibrating center. Wherever that happens to be, there is the place for your mouthpiece!

As to the amount of mouthpiece on each lip, there can be no hard-and-fast rule. One player will get his best results from half on each lip; one will find that more mouthpiece on the upper lip suits him; another will use more on the lower lip. It is important that you adapt a position that is natural to you. This will be determined largely by the shape of your mouth and teeth.

I suggest you try half the mouthpiece on each lip. If that is not comfortable, move it slightly up or down until it seems to "fit." If you do have to move from half-and-half, be sure that the outer rim of the mouthpiece does not come onto the red of the lips. *The outer rim is to be on the white of both lips.* Pay close attention to this point!

Should you have thick lips, or lips with a good deal of red showing, and you play a small-mouthpiece instrument, you may be obliged to roll the lips slightly under—a slight curling inwards. This will cut down on the amount of red showing, although this will tend to thin your tone.

Throughout this week you must keep checking in a mirror for the all-important position of mouthpiece on the lips. Bear in mind the two main points: (1) mouthpiece to be placed on the vibrating center of the lips; (2) it is to be in a comfortable position, with the outside of the rim on the white of both lips.

Connection

Once you have determined the natural position of the mouthpiece on your lips, you start to develop the muscles of the lower face—the embouchure muscles. The thought to keep in mind throughout development, and the point at which you aim, is just this — attaining a connection between the mouthpiece and yourself, the strongest possible connection.

Will you mull that last sentence over in your mind now? Think, as you say aloud, "The strongest possible connection between the mouthpiece and myself." What exactly does that mean?

Suppose we consider some of the sports in which we take part. At golf, tennis, and baseball, for instance, we work to develop a connection between ourselves and the club, the racquet and the

bat—through a "grip" or manner of holding. The hands are the connecting link between ourselves and the object we employ to propel a ball.

At first, the object is unwieldy and we feel awkward. We think of it as being something that we *hold* – something that is remote from us. Then, with development, the object becomes less unwieldy, and starts to come under our control. Finally, it is a part of us; it is as though our hands extend into the object itself.

The simile could extend to the skier, and the connection he develops with his skis; from seemingly "fifteen feet" at the beginning stage, they eventually seem cut down to "the length of his shoes." It could be the connection between you and the pen or pencil you hold when learning to write. And so on.

Consider any physical action in which the skillful use of some object is concerned, and you will find a strong connection between the object and the individual. When this connection is sufficiently strong in us, it is as though the brain messages for action are transmitted, not to our hands and then the object, but seemingly directly to the racquet club, pen, or whatever we are using.

That oneness, that unison with an object we employ, is the same that we seek to develop with our mouthpiece; it is to become part of us. And, that connection between ourselves and the mouthpiece will come only through keeping to one position of the mouthpiece on the lips. We have first to find our natural position, and then stay with it. The mouthpiece never moves! Regardless of where in the register of the instrument we play—low, middle, high—the mouthpiece remains in exactly the same position on the lips. This is a *must.* Keep it in mind now and always!

Application

Let us get on to mouthpiece practice. Holding the mouthpiece lightly between thumb and index finger, place it on what the mirror shows to be your natural vibrating center. Now practice taking a breath, with the mouthpiece in that position—for that is the way it must be taken when you play. Take the breath in by dropping the chin slightly—start the habit of taking it *quickly* and *quietly—without moving the mouthpiece.*

Think now of the lips inside the mouthpiece. Close your eyes

and concentrate on the following points. Are your lips firm at the corners? Are they pressed together in a slight puckering formation? Can you feel the center portion of the lips soft, and free to vibrate? If so, good! You are ready for your first sound on the mouthpiece.

Holding the mouthpiece only firmly enough to prevent air from escaping, tongue as you have been doing without the mouthpiece. Using the syllable TOO, *explode* the air at lips that are *properly set*. You will note that the mouthpiece amplifies your weak, buzzing sound. Regard it as being a small instrument that strengthens the sounds produced by your lips.

Will you practice in this fashion for a week? Will you curb your natural impatience for another seven days, having my assurance that it will save you months—maybe years—in your practice, that it may spell the difference between wonderful playing and mediocre playing? If you will, more power to you!

Here is a plan for your practice:

(a) Stand before a mirror, holding mouthpiece lightly on the lips.

(b) Take a good breath before each note . . . check your breathing.

(c) Form your lips. Hesitate, to make sure your lips are *set*. Tongue sharply so that sound results *immediately*.

(d) Check this point concerning the chest. There is to be no movement as, or after, you tongue. Keep one hand on the lower ribs; feel a firm control in the region of the diaphragm as you tongue. *The chest must not drop!*

(e) Check that there be no movement about the mouth as you tongue. The muscles should be set before you tongue; they must stay in that exact formation as, and after, you tongue.

(f) Sustain each note for a full breath. Remember the instructions on breathing out, and work to control your breath. How many seconds . . . 20 . . . 30 . . . 40?

(g) Produce different notes by using the muscles about the mouth, chin, and lower jaw, to tighten and loosen the vibrating length. Discover for yourself the small amount of tension necessary to produce a next higher note. Think of any note pattern as a graph, with the embouchure muscles loosening or

tightening accordingly.

Produce only sounds that are within your present range; this will depend upon the extent to which you have loosened your lips. You are *not* to press the mouthpiece into the lips! Should the mirror show a deep imprint of the cup on your lips, then you are pressing too much. Keep in mind that the slight, but firm, pressure necessary to prevent air from escaping, and to establish a connection between yourself and mouthpiece, does not vary. You are to depend upon flexibility and muscles—not pressure!

Rather than a range of notes, you must now concentrate on *quality* of notes. Quality now will suggest a note that starts immediately you tongue, and flows without interruption. This is expecting a lot of a beginner, but, with perseverance, you can do it!

Along with the other good habits you are developing, there is one that "moves mountains"—PATIENCE. Let us see what some of the great thinkers have to say about this virtue. "He that can have patience, can have what he will." (Franklin). "Patience is not passive—on the contrary, it is active; it is concentrated strength." (Bulwer). The word "patience" need not call to mind the picture of an elderly gentleman peacefully smoking his pipe as he waits for a bus. The patience you are exerting now is part of a methodic plan. Instead of rushing pell-mell into a study that means much to you, you are intelligently following the rules that are essential to success in anything, be it music, business, or what have you. You are taking each step in its turn, thus showing organization in your thoughts. This way you cannot fail.

Your work this week will be directed at the following points: natural (not normal) breathing, further loosening and tightening of the lips, adoption of the lip formation for correct embouchure, tonguing to start each sound, and adapting the sound to the mouthpiece.

Hundreds of times each day you will concentrate on taking a breath *properly* before you blow. You will blow out easily, concentrating on portions of the lips that are still resisting vibration. You will produce different sounds, and check in the mirror that there is no movement about the mouth as you tongue. You will accustom your lips to the mouthpiece and strive for good quality on all the sounds produced.

Go "all out" now to make the most of this week! You have no music to read and no valve or slide to think about. This is an opportunity to get a lot of good habits well under way. Make the most of it!

Chapter VI

The Instrument

You are about to insert your mouthpiece into your instrument and produce your first *notes*—as opposed to the *sounds* you have been making up to this point. Congratulations! But, first, what do you know about this instrument of yours? While even a fine pianist needs know little or nothing of the mechanism, maintenance, tuning, etc. of the piano, it is important for you as a brass player to know your instrument, know how to care for and keep up the working parts, know how to tune it, and know the principles governing its operation.

Appendix 1, page 106, is a very brief history of brass instruments which I hope you will read. As a matter of fact, if you have time, read it now! If nothing else, I believe it will give you an appreciation of how many centuries of trial and error, how much frustration, and how great a degree of ingenuity it took to produce the mechanism of the brass family as it is today, and you will note many references to it throughout this and other chapters of this book.

Mechanism

While an understanding of the mechanism of any brass instrument is essential to proper care and handling, the average beginner fails to concern himself to any extent with this detail. Let us consider this machine (for it *is* a machine, with delicate working parts). If for no reason other than keeping it in first-class working condition, we would be advised to have more than a smattering knowledge of it.

That very wise saying, "a little knowledge is a dangerous thing," brings to mind an incident in my early days of operating a car. A mechanic asked what kind of oil I was using to lubricate the engine. When I replied that I favored no particular brand, but accepted whatever was handy, the mechanic was more than horrified. To him, mixing engine oils spelled nothing but trouble, while I had no idea there might be any difference. What I had considered sufficient knowledge proved most inadequate, and ex-

pensive! This same lack of knowledge concerning their instruments is prevalent among brass players.

Before going on to care of the instrument, let us see what happens when we press down valves and extend the trombone slide. The employment of valves is to vary the length of the wind column by shortening or adding certain lengths of tubing. This allows for production of a complete chromatic scale throughout the compass of the instrument.

There are seven separate lengths of wind column available, corresponding to the seven positions on the slide trombone. Each column has a bugle-like series of tones that may be produced (see page 107 of Appendix 1). Without depressing the valves or extending the trombone slide, we have what corresponds to a bugle—the larger the instrument, the lower the tones that may be produced. Just as the big bass viol has a deeper sound than the cello and violin, so has the tuba a lower range than the trumpet and trombone.

The Slide

Let us move the trombone slide from its first position (slide closed) out to its second position, approximately three and one-half inches. The trombone is now longer, and so the second bugle-like series of tones will be lower than the first by a semitone (half step). This principle holds through the third, fourth, fifth, sixth, and seventh positions. Each succeeding position allows a new series of tones that may be obtained. Thus we see all open tones, i.e., notes produced withou use of the slide, may be lowered up to six semitones by extending the slide and so making the trombone longer.

Valves

That this same principle of lengthening and shortening tubing holds for a valve instrument will easily be seen. A glance at any three-valve instrument will show differing lengths of tubing projecting from the valves. There is a slide on the end of each that can be removed.

(A point here! Whenever removing or replacing a valve slide, it is important that you *PRESS DOWN THE CORRESPONDING*

VALVE. Otherwise, there will be compression on the valve. Remember this!)

Let us refer to the lengths of tubing projecting from the valves as pipes; we have three of them, (1), (2), and (3).

The shortest is (2), and we will regard it as one unit of tubing. Next is (1), and, being approximately twice the length of the second pipe, we will call it two units. The longest is (3), which will be seen as approximately the combined length of the first and second pipes, and so three units. Thus, the three pipes will add up to six units of tubing—just what we have with the trombone slide's six extended positions.

To help get a clear picture of the part that valves play on your instrument, remove the slides from the three pipes (caution: press down the valves first!). Note that, with the valves up, the tubing is sealed off. The instrument is only a bugle, and could be played as such. Yes, even with the slides off!

With slides back in place, depress the second valve and see how the air passage clears, as the holes in the valve correspond to the holes of the pipe. The instrument is now longer (by one unit), just as the trombone was with the slide extended to its second position. By depressing the first valve, you clear the air passage to the first pipe, and so the third valve to the third pipe.

Let us compare now the trombone and the three valve instruments insofar as the principle of lengthening and shortening tubing is concerned:

TROMBONE Slide Position	VALVE INSTRUMENT	Units of Tubing Added
First (Slide in)	Open (all valves up)	(0)
Second	Second valve down	(1)
Third	First valve down	(2)
Fourth	First & Second valves down	(2+1=3)
Fifth	Second & Third valves down	(1+3=4)
Sixth	First & Third valves down	(2+3=5)
Seventh	First, Second & Third valves down	(2+1+3=6)

So we see the seven separate lengths of wind column available on each type of instrument. You will recall that each column has

its own bugle-like series of tones that may be sounded. Let us examine the first series, i.e., valves up, slide in; the "open" tones. The notes of the series are not equidistant, but the interval (or distance) becomes less as we ascend. From the first open tone to the second, we have an interval of seven semitones, as from C to G. Between the second and third notes, the interval is five semitones. The interval between the third and fourth notes lessens to four semitones. This will suffice to show the irregularity of the intervals between open tones. (This is discussed somewhat more fully in Appendix 1, starting on page 107.)

It was shown that all open tones may be lowered six semitones by extending the trombone slide or depressing the corresponding valves. Descending in semitones, then, from the first and second open tones, we find the fingerings or slide positions as explained. This works out so that the six valve combinations or extended slide positions fill the gap between the two lower open tones. Since the intervals grow smaller as we go higher, it is obvious that there must be an overlap, with some notes appearing in more than one series. These notes have extra fingering or slide positions, referred to as "auxiliary" or "alternate." Should your exercise book fail to list the seven series (harmonic series), you will be able to make up your own, using the above principle.

The valve player will seldom use auxiliary fingerings; the trombonist FROM THE START must learn alternate positions. For, to him they are indispensable, since he may save arm movement and play what would be otherwise impossible passages.

It should be known that many notes available in auxiliary positions or fingerings are not quite true in pitch. The trombonist may rectify this discrepancy by a slight change of his slide (the reason for the trombone being known as the only "perfect" brass instrument). The valve player, however, is more or less confined. To "lip" a note into tune is not satisfactory, so he is advised to stay with the regular fingerings as listed in his book unless an auxiliary be specifically indicated.

Tuning Your Instrument

For the rest of your playing days, you will be obliged to "tune up," so it is necessary that you know what this implies.

In order that you play along with others, you will naturally have

to be in tune with them. YOUR INSTRUMENT WILL ALWAYS HAVE TO BE TUNED BEFORE YOU START TO PLAY! It always comes as a shock to me that some musicians will forego this detail, as though it were unimportant. IT IS A MUST!

You may have heard the expression "A-440." It means that 440 vibrations per second has been set as the rate of vibration for the note "A." Reference here is to *concert* "A," as on the piano, and not necessarily "A" on your particular instrument.*

While most instruments of a good grade are built to these specifications, we find some that are not. They may be in tune within themselves, but sharp or flat to what is recognized as a standard pitch (A-440). Any discrepancy must be rectified by use of what is known as the "tuning-slide." Should the instrument be sharp, the slide will be pulled out to make the instrument longer, and so lower. By closing the slide, the instrument is made shorter, and so higher.

So the rule is:

IF THE INSTRUMENT IS SHARP – PULL OUT!

IF THE INSTRUMENT IS FLAT – PUSH IN!

The fact that your instrument may be marked as built to "A-440" does not mean that it will always be in tune and not have to be touched. You might play in four different bands and find that each would have its own tuning specifications, varying slightly in each case. Ten pianos might be found varying in pitch; you would be obliged to move your tuning slide in each case. It probably would not be much—a sixteenth of an inch, a quarter of an inch.

Your instrument itself will vary in pitch—with the temperature! *A COLD HORN WILL BLOW FLAT*, but will come into its true pitch when it has become warm. I have seen players push in the slide of a cold horn and then neglect to make allowance for the change in pitch as it warmed up. As the instrument warms up, it will sharpen to a degree, since the vibration of a musical note increases with a rise of temperature. I am not suggesting that warmth to concert-hall temperature – 68 degrees Fahrenheit – will make an instrument sharper than the pitch to which it was built. Just remember that a change from cold to warm will make an instrument sharp, from warm to cold will make it flat. You already know

*See Appendix 2, *Transposition*, page 115.

how to compensate for these variations.

We sometimes find an instrument that is out of tune in itself—that some notes of the register are flat or sharp. Usually this condition may be found in old instruments, with the valves worn and loose, also in cheap instruments where the workmanship is poor. The best remedy in this case is a new instrument, or, failing that, a trip to the repairman. An instrument that is out of tune in itself, I regard as a menace which should not be tolerated! Not only is it deadly for the ear of the player so that he becomes trained to notes off pitch, but it will ruin the sound of any band or orchestra in which it is heard.

Some schools recommend the following procedure for tuning the valves: Sound the fourth open tone; sound the same note again but using the *third* valve; make any necessary adjustments of the *third* valve slide. Sound the third open tone; sound again using second and third valves; adjust *second* valve slide. Sound second open tone; sound again using first and third valves; adjust *first* valve slide accordingly.

It is recommended that you normally keep the tuning slide pulled out about half an inch. Start that now, and leave it there. Make any adjustments necessary when playing with others, but for your own practice it should be kept in ONE POSITION. Each move will bring a change of pitch and the average beginner is not equipped for the necessary ear adjustment.

I suggest a careful study of the advice offered. Know why, how, and when to "tune up." You will have just one more requisite of a good musician!

Care of the Instrument

First, and most important: YOUR INSTRUMENT IS EXTREMELY DELICATE! While this might seem to be common knowledge, it has been my experience that only the professional player actually regards and handless it as such. He alone seems aware of the fine tubing and delicate working parts.

It is not unusual to see a player pounding the mouthpiece into his horn, childishly pleased with the popping sound, and unaware that he may be damaging the tubing. Or he may stand the horn on its bell, or grab hold of the tubing as he might a ball bat. Valve

trouble, in many cases, may be traced to the practice of fooling about with the valves when not playing, or by pressing them down from a different angle. They are meant to be pressed straight down at all times! The ignorant trombonist thinks nothing of hanging the instrument over the back of a chair or laying it down carelessly, with resulting strain on a slide whose outside-wall thickness is only a few thousandths of an inch; to say nothing of jamming music into a case designed to hold and protect only the instrument itself. Because the euphonium and tuba have a hefty appearance, we find players handling them like so much freight. Dozens of times I have seen an instrument fall to the floor through carelessness. In most cases, the reaction was one of casual disinterest, as though one more dent was no great cause for alarm. They seemed unaware of the fact that EVERY DENT HAS AN EFFECT ON THE AIR COLUMN and, consequently, the tone quality.

CLEANLINESS IS A MUST! Consider that the air column throughout the instrument must be propelled back and forth several hundred times a second by your lips. Obviously, then, the smoother the walls containing the air column, the smaller the amount of energy that will be lost because of friction, and the easier the instrument will blow.

"The smoother the walls, the easier your instrument will blow" is a strong point in favor of cleanliness, don't you think? And this rule holds for the mouthpiece as well. Don't neglect the all-important "speaking part" of your instrument. I recall the instance of a young player who complained of breathing difficulty as he played. Beet-red in the face, he was blowing his lungs out to get through a four-bar phrase. His poor tone quality had led me to suspect the trouble, and I suggested he look to his mouthpiece. That was it! Through all the "garbage" that had collected over a period of time, there was but a tiny passage through to the instrument. I doubt that this boy has ever needed to be told again about the importance of mouthpiece cleanliness! Take a lesson!

There are other reasons, too, for keeping your instrument clean. Health is one of them. When playing a brass instrument, we use the tongue in a "spitting" motion to start notes. This action naturally sends saliva into the instrument, and a coating forms on the inside of the tubing. If allowed to stand, the saliva acids act on the

copper content of the metal to form deposits of verdigris—a bluish-green substance.

This is what verdigris does to an instrument:

(a) Causes a disagreeable odor;
(b) Offers a breeding place for germs;
(c) Clogs up the instrument, preventing free blowing;
(d) Eats into the metal.

There is one more reason, and a very strong one, for keeping your instrument free from accumulations of saliva, dust, food particles, etc. Physics tells us that, if any obstruction occurs at what is called a "node" in the wave of a certain tone, this tone will sound sharp. If it occurs at what is called an "antinode," the tone will sound flat. Forget, if you like, "node" and "antinode," but remember the point—AN UNCLEAN INSTRUMENT MAY CAUSE NOTES TO SOUND OUT OF TUNE!

Wash your instrument regularly. A daily run-through of clean cold water will prevent slime from forming and eject any foreign matter that may have gotten into the instrument. A weekly bath will keep it in first-class condition, saving you trouble, inconvenience, and possibly trips to the repairman.

Here is the way to go about the weekly bath. First prepare the materials for the job. You want warm, soapy water (Castile soap is good), a cleaning rod, mouthpiece brush, cheesecloth or other lint-free material, and vaseline or slide grease.

For Valve Instruments:

(a) Pour soapy water into the bell, working valves so the solution will pass through the valve slides.
(b) Rinse with clean cold water.
(c) Remove valves and all slides.
(d) Swab insides of valve casings, valve tubing, and slides. Be sure here that your cloth completely covers the metal of the cleaning rod, so that you do not scratch the valve casings and tubing.
(e) Lubricate valves and return them to casings. (Handle them carefully – they are easily dented!) Replace No. 1 valve in No. 1 casing, No. 2 valve in No. 2 casing, and No. 3 valve in No. 3 casing. Look for corresponding numbers if you are in

doubt. It is a good idea to apply vaseline to all threaded caps, to prevent "freezing."

(f) Dry off slides and rub on a small amount of vaseline or slide grease. (When replacing the slides, remember to press the corresponding valve first!)

(g) Swab mouthpiece, rinse with clean water, and replace.

For Slide Instrument:

(a) Remove bell; wash with warm, soapy water.

(b) Pour a glass of soapy water into the slide. Work slide several times to loosen any accumulation.

(c) Lift inside slide *carefully* from outside slide and lay it on a clean cloth.

(d) Clean the outside slide by, first, using a pull-through (a long cord, weighted at one end and with a strip of clean cloth at the other end). Then wrap clean cloth around rod in such a way that the metal is completely covered, and that you may hold the end in your hand to prevent sticking in the slide. Run cleaning rod through till the slide is clean.

(e) Clean inside slide, using only the pull-through (there will be less chance of damaging the delicate interior of the mouthpiece receiver).

(f) Clean tuning slide and apply vaseline, replace.

(g) Swab mouthpiece, rinse with clean water, and replace.

LUBRICATION IS A MUST! Valves and trombone slide should *never* be worked when dry, lest the friction cause scratches on the metal. Since a lightning action is required for rapid execution on your instrument, you must pay special attention to this point. Lubricate your instrument every day!

There are different methods of lubricating valves and trombone slide. Manufacturers recommend oil put out specifically for this purpose, their argument being that an oily film is necessary to fill the pores of the metal and guard against corrosion by body acids. Some players use cold cream, applied sparingly, and spray on water. Some use saliva on valves; I advise against this practice; not only is it unsightly, but the saliva acids will do the valves no good over a period of time. On some new valve instruments, it may be necessary to use only clean cold water until such time as the valves are "run in."

KEEP YOUR INSTRUMENT LOOKING ATTRACTIVE! While a sparkling bright horn may not be necessary to good musicianship, it does create a good impression, and is good for a player's morale.

Lacquer finish is easily kept up by wiping instrument after each handling, and using a high-grade lacquer preservative. It should be known, however, that lacquer is not a plating, and its life is not guaranteed. Some persons have so much acid in their system that it will eat through lacquer in a matter of days. Wiping the instrument daily with a soft cloth will prolong the life of lacquer, but those having an excess of acid would be advised to procure a valve or slide protector. A cloth would serve the purpose, as one well-known brass man is seen to use.

For plated instruments, wipe daily with a soft cloth to remove perspiration, and use a high-grade polish prepared for that finish.

Plain brass finish requires a weekly polish and must be wiped daily. When using brash polish, be sure to wipe carefully from all crevices, as some acids destroy solder at the joints.

General Hints on the Care of the Instrument

(a) Have a repairman remove any dents or a "frozen" mouthpiece. Do not attempt the job yourself.
(b) Do not hit the mouthpiece with your hand to drive it in. Simply give it a slight twist to seat it properly.
(c) Have the mouthpiece replated at the slightest sign of wear. A MUST!
(d) Do not use any abrasive to clean valves or trombone slides.
(e) Check the water-key cork for wear.
(f) Don't take the chance of damaging valves and slides by cramming music into a case designed only to hold and protect the instrument.
(g) Always blow water out of the instrument before putting it away.
(h) Keep in mind that, while built to give years of satisfactory service, your instrument has tubing as thin as paper and a mechanism as fine as a watch. Treat it with respect!

Valve Manipulation

Valves should be pressed straight down, using the first joint of

the finger. A slight bridging of fingers and wrist will place the ends of the fingers on valve tops in such a way that a vertical stroke down and up will be natural.

Cupping the palm of the hand against valve casing should be avoided, as dropping of the wrist tends to confine finger action. This also leads to a sideways thrust against the valves and tends to push them more to one side than the other, causing them to rub. This is a sure way to bring about a faulty and undependable action. AVOID IT!

Only today, a pupil confided his extreme annoyance at the faulty action of his first valve. It would work well, then, "SLURP!" – that horrible sound caused by a valve coming up too slowly and ruining a performance. This fine trumpet player was ready to wrap his instrument around a telephone pole. Why? He had formed the habit of dropping his wrist and pressing the valve in such a way that it rubbed on the casing. You cannot imagine the number of times this very thing occurs, to top players as well as beginners. Check your finger action right now.

One further point with regard to cupping the hand against valve casings: you are apt to exert a pressure on the second valve slide, which puts a strain on the casing itself. This will cause the valve to bind. Your hand should not touch this slide!

Practice at first with the little finger moving along with the other fingers. Later you may put this fourth finger in the ring or hook provided on some instruments, and this will enable you to play with one hand when necessary. For the present, however, it is best to leave it free to encourage relaxed muscular action in the other fingers.

Trombone Slide Action

Trombonist, respect your slide! It is the heart of your instrument, the vital organ essential to performance. It must be dependable, and it must be lightning-fast. It must move freely and with a minimum of effort to the player. Therefore, it must work perfectly!

We see the outside slide—the hand slide—as a U-shaped piece of tubing that telescopes over the inside slides. The tubing of each slide we find to be only paper-thin, with a clearance between slides of approximately three thousandths of an inch.

Think of that—a clearance of three thousandths of an inch! It will then be readily understood that nothing—absolutely nothing—must be allowed to interfere with the gliding motion of the slide. A dent—the slightest dent—would be as a mountain; inner slides sprung out-of-parallel would make the hand slide a bar bell; grime would change the smooth highway to a gravel road.

A sluggish or faulty slide action cannot be tolerated! It is ever a source of annoyance to the player, slowing down execution, interfering with smooth performance, and distracting attention from music playing. To play in such a handicapped fashion might be likened to a car trip in a vehicle that proceeded by fits and starts. True, we might eventually arrive at our destination, but what an ordeal! Would there be room for conversation, for quiet contemplation, for enjoying the scenery? No! All attention would be given to the cursed rabbit-jump motion of the car!

In music playing, we can afford no thought whatsoever to the instrument. And if our attention *is* taken to the instrument and its mechanism – *there* music finishes! So for the sake of the music you wish to play, and for your own peace of mind, keep your slide action perfect.

Here are a few added hints in this regard:

(a) Remove slides carefully from case.
(b) Always take hold of the instrument by the outside hand brace to avoid dropping the hand slide – lock, or no lock!
(c) Fit slides carefully together after lubricating.
(d) Keep slides perfectly clean.
(e) When resting, lay the instrument down so there is no strain on the slides.

Holding the Instrument

If you will keep in mind one rule necessary to successful brass playing, there will be little need for detailed instruction on the proper way to hold your instrument. This is it: "Stand or sit *erect.*"

This need not suggest a stiff, "pasted-against-the-wall" look, but one of normal *good posture.* With good posture it is natural to hold an instrument in its proper playing position, regardless of the direction in which the bell faces.

In anticipation of a possible, and probable, read-it-and-forget-it reaction to this advice, I am listing several arguments in favor of a good-posture habit when holding the instrument. Read them carefully, mull them over in your mind, argue if you like, then draw your own conclusions.

First, the advantages to you, the player:

Breathing

Standing or sitting erect tends for good breathing habits, in that the chest will be in its natural good-posture position, with the abdominal muscles free for their all-important function.

Should you have any doubts in this regard, you have only to test yourself in this manner. Crouch forward, as though reading from a low music stand. Try to take a full breath. Now assume an erect position and try again. (Later, you might try sustaining notes from these two positions.) Need more be said? Not only is it impossible to take a full breath from a crouched-forward position, but there is an uncomfortable weight pressing down upon the abdomen. You may remember (in the chapter on breathing) just how important a part the abdominal muscles take in the playing of your instrument.

Open throat

Your throat is more apt to be open, since expansion of the chest coupled with an erect position of the head and neck tends to draw the larnyx down and back, opening the throat. Just think how much easier it is to pour water from a large-necked bottle than from a small one. You will soon grasp the significance of this theory.

Balance

This point is of particular importance to players of trombone, cornet, and trumpet, who are obliged to hold their instrument well out from the body. Trombones usually have a weight on the tuning-slide crook to assist in balance when the instrument is held horizontal; cornets and trumpets balance at the valves when held in this position.

Ease of fingering and slide movement

Standing or sitting erect tends for a more secure grip on the instrument with the holding hand. This allows freedom of the fingers or arm for the all-important manipulation of valves or trombone slide.

Mental alertness

An erect position of the body, coupled with deep breathing, promotes a keen and alert state of mind.

And now, effect to an audience:

Sound effect

Sound is the medium through which we express ourselves in music. Then, does it not stand to reason that, when offering our music, we strive for the ultimate in sound effect? Must we not make every effort, that the listening audience hear our music at its fullest tonal quality? Must not our pride in achievement insist that our work be shown only in its "best dress"?

Yes! Just as the artist demands the best light for the public viewing of his painting, and the poet chooses the proper environment for the hearing of his poem, so must we be satisfied only with the best sound effect for our music.

Architects planning an auditorium, a concert hall, a dance hall, will dwell at great length on the matter of acoustics. Band and orchestra conductors will take the greatest pains with stage acoustics, platform levels, and seating arrangements, to ensure the best possible sound effect "out" to an audience. More and more brass instruments are being built in the "bellfront" style, in attempts to improve on over-all sound effects of bands.

We, then, as players, must give due consideration to sound effect when holding our instruments. We must hold our instruments so that the maximum in tonal quality be received by an audience.

Appearance in holding

There is a certain amount of "show" connected with performing before an audience whether it be the school band marching down

the street, the symphony orchestra in an auditorium, or the dance band in a night spot. The listening public likes to watch music being played as well as hear it. They will go miles to see in person an ensemble or soloist they might have heard by turning the radio switch. House parties will listen to an amateur pianist pounding out dance tunes in preference to the top bands of the country that might be had on radio or recordings.

You must not only play your very best, therefore; you must also look your very best. When playing before the public, you are on show from the minute you appear until the performance is over. Think of this when raising or lowering your instrument. It is just as easy to be graceful as awkward. Instruments such as trumpets, cornets, and trombones should be raised in an arc and brought to the lips. When not playing, the instruments should be returned to a rest position.

These are simple habits, easy to form. They will make you much more of a finished player. Check your posture and holding before the mirror every day. You will soon be so in the habit of correct holding that no thought will be necessary.

Chapter VII

Embouchure Training

3rd Week — INSTRUMENT PRACTICE

You will do well to regard your instrument as an amplifier—a loud-speaker that amplifies the sounds made by your lips. You are aware by now that there is nothing magical about valves or a trombone slide. They merely make more notes available to you. It is for you to make your lips vibrate at the frequency for the notes desired. In other words, you depend on the lips. The action of moving the valves or slide may be reckoned as only about *two percent* in importance.

I sometimes suggest to a pupil that I move the valves or slide while he does the blowing on a passage that is giving trouble. Invariably he plays the passage much better, through concentrating entirely on the lipping.

You will save much time and trouble by learning the fingering or slide positions now. As each new note is introduced, write it out a few times and memorize it. Then put it into practice. You do not want to form the habit of playing by numbers; in fact, I suggest you tape over the fingering or slide positions marked in your book. Get into the habit of "seeing and hearing" notes. Read all the notes you play, to the point that you get this down to an instinctive reaction as soon as possible.

And now go into your instrumental practice! Your reward for two weeks of patient work will be apparent. Your lips are loose and vibrant, you are getting accustomed to breathing deeply and keeping a note singing for a long period, you know how to tongue and, after all, what does the instrument do but amplify the sounds you have been producing?

Your tones should start cleanly and definitely and sing out "clear as a bell." It is quite possible that your tone this very first day may sound better than that of a person who has been playing in a harum-scarum fashion for a year. You are doing everything right!

For the first few days now, while you are getting accustomed to

the instrument, you will be well advised to confine your playing practice to the open tones, and only to those tones you may produce *without pressing* the mouthpiece into the lips. There is much you may do on the first few tones, and you might follow this plan:

(a) Always loosen the lips before starting to practice; you know how to go about this.

(b) Stand or sit in an erect position, facing a mirror.

(c) Form your lips *before* you tongue each note; try to start each note cleanly.

(d) Sustain each note for eight slow counts. Think now of an intensified air column supporting your tone—like the garden hose turned down to force a fine stream of water.

(e) Form your lips, bring the instrument up, and tongue *immediately*—instrument off without relaxing or changing the lip formation in any way, back, and tongue again. Do this many times in one breath. The idea will be obvious—your lips must be correctly formed if you are to strike the same note each time. You will get like the singer, who imagines a note, unconsciously adjusts the vocal chords, and strikes it.

(f) Practice tonguing while sustaining notes now. The point to watch for here is that you do not make a big gap between the notes. When notes are played in succession (as opposed to a single note) you do not stop each note. Like slicing bananas, starting the second cuts off the first—just flick the tongue to give start to a new note. Do not make a definite stop and then tongue again. Music is a succession of sounds and you will want your notes to flow with continuity.

You will now require a practice book, a well-graduated beginner's book. I suggest you shy off any book that will take you into the upper-register notes in the early stages of study. While most books are well written, I have seen some that, while advising against the practice of using pressure, introduced high notes long before a pupil could possibly get them any other way. Ask for the best beginner's book for your instrument—the dealer will help you in this respect. For trombonists, I suggest a book that follows the harmonic system—each position in turn.

The average book will start with the lower and middle register

notes in exercises of about eight bars length. Now, regard the first exercise as a weight lifter is taught to regard his bar bell—a means to an end. You must develop a certain amount on that exercise before you are *fit* to move on to the next. Make no mistake about this point. It is as important to your success as any of the other habits.

I have seen literally dozens of students come to the proverbial brick wall through nothing more than a disregard or disbelief of this point. They assumed that an exercise was finished with once they were able to play the notes correctly. If that was accomplished the first time through, on they went to the next. Needless to say, through lack of development, they arrived one day at an exercise that was beyond them.

Let common sense be your guide in this respect. Would a weight-lifting student, because he was able to lift his first light bar bell, immediately go on to a heavier one? Of course not; he would have to develop so much on his first one. And you are the same; once you can play the notes correctly, then you go to work on it—over and over—as though you were doing calisthenics. The difference here is that, with each repetition, you strive for improvement; you do not repeat just for the sake of performing the exercise a certain number of times. When you know truthfully that the exercise has become easy, then you may consider yourself fit to move on to the next. Leaving the exercise before such time, you will fool only one person—yourself! Form the habit of thorough work on each exercise and you will increase your chances of success by *fifty percent!*

One thing more in regard to these first exercises. THEY ARE TO BE COUNTED VERY, VERY SLOWLY! Why? For three reasons:

(a) You will have lots of time to think of all the factors connected with producing good tones;
(b) You will have time to read ahead and prepare yourself for a possible lip and valve (or slide) change;
(c) You are more apt to relax and play confidently.

There is one more advantage to be had from playing all these exercises slowly—*you will be less apt to make mistakes.* Mistakes waste time—valuable time—and they ruin a player's chances of developing confidence in his playing. YOU MUST HAVE CON-

FIDENCE! Every mistake means more work for you, more time that you must spend on an exercise. Why not practice in the same fashion as the accomplished player? He takes an exercise or a piece of music, looks it over carefully first and notes the most difficult passages, then goes to work. Does he necessarily start at the beginning? No! He more than likely takes the difficult part and works at that until it is no longer difficult. Then he may start at the beginning. And, you may be sure that he starts off slowly so that there will be no chance of mistakes.

Start now the habit of intelligent practice. Look over each exercise *before* you start to practice it. Study it, be sure that you know all about it—then go to work slowly and methodically. Practicing in this professional-player manner, you will save much time and work, and you will always play confidently.

Practice Habits

Practice *every day!* There is no one thing better for morale, that will help you to "stay with" study, more than the steady advancement that follows from everyday blowing. On the other hand, there is nothing more demoralizing than the sad results of hit-and-miss practice. The lips stiffen and refuse to vibrate, reactions in general slow up, and it takes days of hard work to get back to where you were. My students have proved that one day missed takes two days to get back to form. Two days away means as much as five days lost. Miss Tuesday and Wednesday, and you have lost a week—think of that! Time is precious enough without having to go back over work that has once been done.

Form the habit of *routine*. If possible, start practice at the same time each day. Keep at it until music time becomes as regular a part of the day as breakfast, lunch, and supper. The beginner would be wise to have three or four sessions of fifteen minutes each, rather than one long practice (which would be too much for an undeveloped embouchure).

If you can possibly manage it, practice in the early morning; or, at least get in part of it at this time. Early morning is, without doubt, the ideal time for any study. You are fresh in body and mind, and there are fewer distractions. This is particularly important during the summer months, when hot weather is conducive to anything but an activity calling for concentration. Try rising a

bit earlier for the next few weeks; I wager you will find yourself accomplishing enough to warrant the habit. Whatever time you do decide on for your music, stay with it. The results will more than make up for other pastimes you may have to put aside.

Try to set down and follow some sort of SYSTEM throughout your practice session. This is the only way to succeed in any form of study. Also, the time seems to pass more quickly with a plan to follow. There are so many phases in your music study to be covered each day, so many habits to be worked on, that a definite plan is the only way to ensure that none will be missed. System is a *must* for all-round development and for keeping up interest in your study.

I recall a student who was at a standstill in his playing. A good pupil, he had worked conscientiously and was well into intermediate-grade work. Then—over a period of weeks—no progress, lack of interest, and no desire to practice. It was sad to see. He was discouraged and worried, so I called him over for a talk. He had gotten away from systematic practice, had wandered from one exercise to another without finishing any, and so had accomplished nothing. His last few lessons had been most unsatisfactory. He had not developed on them, and, consequently, I could not take him on to new work. Sight of the same pages for weeks had so discouraged him that he was unable to settle into what he should have done the first week.

With his promise that he would follow instructions to the letter, I set up a plan for his daily stint. It was ten minutes on one phase, fifteen minutes on another, and so on. It worked. Seven days of systematic practice brought such results that interest was rearoused. Now in advanced playing, this boy has never looked back.

Start right now to set out your daily practice into some sort of plan. Recognize exercises as a means to an end. Development on them will enable you to play *music*. Do not expect tremendous results each week. Know that, with all phases covered each day, your playing must steadily progress!

Acoustics

Practice in the room having the *best acoustics*. Acoustics, in this sense, refers to the suitability of a room for the hearing of music.

Some rooms, being very resonant, are said to be "live." Others, lacking in resonance, are termed "dead." Objects such as chesterfields, easy chairs, rugs, and drapery, soak up vibrations and tend to deaden sound.

While we find textbooks failing to even mention acoustics in regard to music practice, my experience has shown this to be a great factor, especially in that it has a bearing on a student's *morale*. He is more apt to enjoy practice when the tone rings out clearly, contrasting to the dull effect of a "dead" room where tone seems to drop from the bell of an instrument and disappear.

Try all the rooms you have available—kitchen, bathroom, basement, or garage. Look for a room with a minimum of absorbent objects and, preferably, with wooden floors. While you do not want "echo," you do want to hear your tone ring out. One piece of furniture you will want—a mirror! This is a MUST. A full-length mirror would be advisable. It need not be expensive. The room should be bright, airy, and not too warm. Heat tends to sap vitality, and you have need of yours.

Find the spot in the room where your tone sounds best. Set up the mirror and your music stand, and you have your best practice conditions.

Practice Tips

Regarding the music stand—KEEP IT HIGH. This is important in that;

(a) You will thus automatically assume a good breathing position;

(b) You will form a good-appearance-position habit.

Another strong point in this regard—blow to the side of your music stand, *not into it!* Time and time again, band players are seen blowing directly at their music rack. Here intonation suffers, tonal quality is impaired, and balance within a section of players is lost. Remember; you want the best possible sound effect to the audience!

Release water through the water key at regular intervals. It is just as well that you get into the habit of doing so after each exercise. You will be spared the embarrassment of that most unmusical "gurgling" sound caused by water in the slides and valves as you

play. A small detail, here—Mother won't appreciate you marking up her floor, so keep an old newspaper handy to collect the water.

Give your instrument its *daily* checkup. Whatever you use to keep valves or slide in top condition, do not neglect this lubrication. Make sure that your mouthpiece is clean—a fouled-up mouthpiece makes the instrument harder to blow, and interferes with tonal quality.

WARM UP FIRST. Just as the baseball pitcher must have his warmup session in the bull pen to get his arm ready for peak performance, so must you prepare your lips. They will tighten up between practices, and you must first loosen them to the point where they vibrate easily.

A few minutes of the "loosening buzz" will start the lips vibrating naturally. Then start blowing in the low register—*softly*. Take your time with the "warmup." It is an all-important part of practice. In a one-hour practice session, warmup should take at least ten minutes. Loosen your lips gradually. Bring them to a loose, vibrant state, and the rest of your practice will benefit.

REST OFTEN. My formula is REST AS LONG AS IT TOOK TO PLAY THE PREVIOUS EXERCISE. In many cases this will only mean a matter of seconds; in others, a minute or two. Whatever it is, your lips will let you know when you are ready to go on. Using your common sense regarding rest, you can practice for hours once the embouchure has developed a bit. Just remember that, for muscles to develop, there must be rest. It is most unwise to go on playing when the lips are tired, since you must then resort to pressure—forcing the lips to vibrate. They will thicken, and your controlled playing is gone!

It is a good idea to have a music-theory book at hand so that you may make good use of your rest intervals. Taking your theory work in this manner, there will be no need for extra study periods. Kill two birds with one stone!

The question invariably comes up, "How long should I practice each day?" I suggest you ask yourself these questions—"How far do I want to go in music?" —"How much of myself and my time am I prepared to give?" One student practices 15 minutes a day, one, an hour, and another gives three hours daily to perfect his playing. Which will you be?

These are questions you must answer yourself. It is not for me to say that you must do either 15 minutes or three hours, for I have no way of knowing how deeply you feel about music. I hope that you will not fit the 15-minute category, for there can be no enjoyment in the low standard of playing that will follow this minimum of effort. I have suggested that you start with several fifteen-minute sessions each day and that, once the embouchure development is on its way, you may play for hours. The rest is up to you. If you work hard and systematically, the results will be such that you will want to do *more and more!*

Chapter VIII

Reading Music

Think back to your early school days. Do you recall students in your old reading class who read easily, without hesitation, lowering the voice in some places, raising it in others, speeding up here and slowing down there, using various means to add expression to the printed words? Do you recall other students who read in a halting fashion, mispronouncing words, running through the end of a phrase, speaking in a monotone, and sounding in general as though they were in a hurry and relieved to get to the end? There will be no doubt in your mind as to which were good and which were poor readers. There will be little doubt, too, that you will see the possibilities of such instances among music students.

Yes, we have good readers and poor readers in music, and we usually find ability on the instrument going along in parallel lines with reading. The student who works conscientiously on his instrument treats the matter of learning to read music just as seriously. The careless student, as may be expected, pays as little attention to reading as he does to playing; he is in too much of a hurry to bother doing anything thoroughly.

In advertisements for musicians, it is not uncommon to see a definite statement to the effect that "only good readers need apply." A musician, looking for a job in music, may advertise himself as being "able to read anything." Any applicant for a job in music is certain to be given a reading test. Dance bands will ask the applicant to play over several numbers "at sight" with the band. Music festivals include sight reading in their competitive tests. Here, the entrants are supplied with music, given a short while to look it over, and then are asked to perform.

Obviously, then, the ability to perform creditably at sight is recognized as one measure of a musician's standard. A good musician is expected to read quickly, accurately, to recognize phrases, and so to be in a position to reproduce in sound the ideas and emotions that the composer intended to convey.

It is no more unusual to be able to read music accurately, quick-

ly, and at sight than it is unusual for you to read this book with understanding at your first reading. As a result of school training, your eyes fly over the pages in search of ideas and theories. You simply put into practice training that graduated from single words to short sentences, then to longer sentences, then to paragraphs. Without this training, you would be obliged to depend upon pictures and recordings.

The player who does not train himself to read depends upon his ear to record what he wishes to play, and so is said to play "by ear." His playing is confined to what he has heard and recorded as a vivid ear impression, and to what he may imagine. Naturally, this leaves him very much limited in his scope.

The poor reader is only a jump ahead of the "ear" player. Though he may get the gist of what he sees, he usually fails to reproduce the complete idea in sound. Reading slowly and haltingly, he is unlikely to interpret in terms of phrases and sentences, being too busy trying to get the right notes. Consequently, we find him running over the end of phrases and breathing in the wrong places. Failure to recognize and observe dynamics affects a lack of color in his rendition. Ignorance of the many terms used throughout music may lead to a complete misinterpretation. For instance, a player not seeing or not understanding the meaning of "Maestoso" might adopt a legato or smooth tongue and perform beautifully *à la serenade* – the only trouble being that "Maestoso" means "proudly, majestically, grandly," and calls for a definite and forceful tongue! This might be likened to a batter using the bunt in baseball when a home run is needed.

On and on they stretch, the faults common to the poor reader, each one adding to the limitations of the music he may play. The good reader, on the other hand, has no such limitations. He looks over a piece of music as you would a speech you were intending to read aloud, picks up his instrument and plays it.

Think now of the advantages connected with being an accomplished reader. Remember what has been said regarding sight-reading auditions for bands and orchestras. Your day is coming – you will try for a band one day. Be prepared for it!

And now for ways and means by which you may train yourself to become a good reader:

Pre-examination

First you must get into the habit of learning all you can about an exercise or piece *before* you start to play. Familiarize yourself with every solitary detail on the music copy, and you will commence practice with a clear-cut idea of the work ahead. You will know the why, the how, and the wherefore. You will know what is coming and be prepared for it, thus saving time and cutting down on the chances of mistakes, This is the only way to begin practice intelligently.

Title and Composer

Your examination will start – where but at the top of the page? Who ever heard of anyone starting to read a book without first looking on the cover for (a) the title and (b) the name of the author? We look to the title for at least a general idea as to the contents of the book. As for the name of the author, he is either familiar to us or not. Some readers, not caring for the type of literature associated with a certain author, will go no further than this point.

Titles, on your first studies, will serve to give the purpose of the exercise, such as, "Studies on Staccato Tonguing," "New Key — F Major," "Chord Studies," etc. Thus you learn the purpose of the exercises. With the introduction of melodies, titles will help to suggest character. Brahms' "Cradle Song," for instance, will leave no doubt in your mind as to style of playing. It is only common sense that we should know *what* we are to play, and *how* we are going to play it.

As for the composer's name, it is only fair to the man that we should know whose music we are playing. If the music is good enough to warrant our playing it, the least we can do is recognize its source. In most beginner's books there will be few instances of the composer's name showing except for occasional solo material. Later on in your study, however, as you become more familiar with the history of music, composers' names will begin to mean something to you; "Johann Strauss" will suggest the Viennese Waltz, "John Philip Sousa," American Marches, and so on.

So much then for the title and the composer. That is where you begin the reading of an exercise or piece. It takes but a second

now to glance at the top of your score for the character and the source, and you are starting one more good habit!

Key and Time Signatures

Key signature, signifying the key in which the music is written, is the group of sharp or flat signs placed after the clef at the beginning of a composition. If you fail to find any such signs in some of your exercises, it means that you play every note natural unless otherwise indicated.

Key, you must know. To begin playing without knowing the key would be about as silly as finding yourself in a swimming pool dressed for mountain climbing. You should not play even the first note of any music without first knowing the key. That note might be A, but it could also be A sharp or A flat. These three notes have different sounds — different enough to make a conductor tear out his hair — or yours! Keep this iron-clad rule in mind: ALWAYS KNOW THE KEY.

Time signature, signifying the time in which the music is written, follows the key signature or, if there is no key signature, immediately after the clef. It may be in the form of two numerals, such as 4/4, 3/4, 6/8, or it may be a symbol looking like the letter C (the same as 4/4, called "common time"), or it may be ¢ , meaning "cut in half" (2/2 and called "*alla breve*" or "cut" time).

Each of the numerals has definite meaning. The upper numeral tells how many counts there shall be in each measure. The lower numeral designates the kind of note that shall receive one count. In common time, for instance, the upper 4 means each measure shall have four counts; the lower 4 indicates that each quarter note shall receive one count. The values of other notes are reckoned from the time value of the note thus designated. A half note shall receive two counts, a whole note four counts, and so on.

Thus, the time signature tells us how many counts there are in a measure, and how long to hold our notes — making it an indispensable part of reading music.

Note Recognition

In school, you learned to recognize words by seeing them over

and over, and by associating them with something, until they became familiar to you. Recognition of notes comes the same way, but need not take so long.

As you play the first note from your study book, keep looking at it. Repeat the name over and over *in your mind.* For example, "Middle C – first line below the staff." Now say it *out loud:* "Middle C – first line below the staff." Do you think it will take long before you are able to recognize this note quickly? Of course not! And the other notes will follow in the same manner.

Fix in your mind the name- and staff-position of every note that you play. You will be surprised at how quickly you get onto this first phase! As you become familiar with the notes, you will naturally read accurately, with no need for mistakes. Your reactions will speed up, giving you time to read ahead and to be prepared for the necessary lip and valve (or slide) change.

It is only by reading ahead that you are able to get the idea of the music. To attempt playing without knowing what is ahead is the same as reading aloud without scanning ahead for the idea. You have no clue as to the inflections necessary to give the words color and meaning, and they sound like so much gibberish.

Read aloud the following quotation by William Shakespeare. (Do not allow your eyes to fly on ahead. Look at each word as you speak it.) "Keep . . . . time . . . . how . . . . sour . . . . . sweet music . . . . . is . . . . when . . . . . time . . . . . is . . . . . broke . . . . . and . . . . no . . . . . proportion . . . . kept" Sounds ridiculous, doesn't it? You were wandering in the dark, so to speak, with no idea how to speak each word. You spoke in a monotone, since you could not know what inflections were necessary. Moreover, you would have conveyed absolutely nothing to a listener when you failed to put meaning into the words. This is a sample of the results in music, when a player fails to read ahead and to know what is to be expressed. He, too, wanders in the dark!

Now read the same passage as Shakespeare wrote it:

"Keep time; how sour sweet music is,
When time is broke and no proportion kept!"

You were able to read ahead, and so were able to anticipate the places at which you should pause, lower your voice, or give emphasis. The passage makes sense to you, and would make sense

to a listener. (Incidentally, the poet's advice is sound, as we will see in the next section of this chapter.)

Plainly, then, a person must read music in the same manner as he reads prose or poetry. Start training yourself *right now* to read ahead. Fix this thought in your mind, say it aloud, print it in your exercise book. READ AHEAD! Only thus can you expect one day to play as coherently and descriptively in music as you speak in everyday conversation.

Time Values

It will be understood that time values must go hand-in-hand with note recognition. As well as knowing which notes to play, you must also know how long to hold them.

The time signature tells the number of counts in a measure and the kind of note that is to get one count. It is probable that your first exercises may be written in common time, and that whole notes will be introduced. These you will be instructed to hold four counts. Your book may refer to these pulses as "beats" rather than counts.

Nothing difficult so far about time values, is there? Nor is there any particular difficulty about the other time values to which you will be introduced, provided you give them careful consideration and practice. It might be expected, then, that we could leave this phase of reading, and get on. Except for one thing: my experience has shown this to be *the most abused phase of reading music,* and I would draw to it your keen attention.

The finished or accomplished reader in music does not count as he plays. He does not need to. His judgment and rhythmic sense lead him on. He gives no more thought to the length of notes than he does to the method of starting or sustaining them. He has gone through the course of training and has arrived at the point where he has accuracy in values, plus recognition for the places in music that call for slowing down or speeding up. He has developed his judgment and now relies upon it, thus freeing his mind for other and more important phases of playing.

You will recall, I said he has gone through the course of training; he was not born with infallible judgment. No, he started out in music just as you are starting now. He may have been blessed

with a good sense of timing and found the training easy. On the other hand, he may have had to work very hard. Whichever the case, he did go through the course, leading to accuracy and good judgment in this very important phase of music study.

In the non-counting class, we have many mediocre and poor readers as well. They differ from the finished reader in one respect; they *guess,* while he depends upon judgment that has been developed to a fine point.

There is a vast gulf between the two methods used in reading. By guessing – the player may be right or, again, he may be wrong. We find him right on some values, close on some, and a mile out on others. Should he play on his own before an undiscriminating audience, he might (and frequently does) get away with murder. An odd beat or part of a beat out, and who is to say he is wrong? He would probably refer to such inaccuracy as being part of his interpretation. But, add one more guessing player on the same part or harmony part with identical time values, and this same indiscriminating audience would, in a second, sense the "fight," and either suffer in silence or hastily depart. Two "guessers" would be too much!

You must be accurate! In your study at this point, there cannot and must not be any liberties. No, not one! You are either right or wrong; there is no in-between in time values. This applies whether you are at practice in your home or playing in a band of a hundred. Start taking liberties in your daily practice and you will develop a habit – a *bad* habit!

Counting

Remember, good musicianship stems from good habits. The sooner you set yourself to careful and accurate counting, the sooner your judgment will be developed. Then you can dispense with counting FOR ALL TIME. Keep this thought in mind: GUESSING IS OUT. Here is the way to go about this part of reading:

Count in your mind, as you play, and start right now on your very first exercise. As this is almost certain to be written in common time and composed of whole notes, you will want to count "1-2-3-4," slowly and evenly. Your tone must be steady throughout the four counts, so *think* the counts.

Play a note now and listen carefully to the tone. Is it coming out steady, or is it TU-oo-oo-oo? You don't want to sound like an owl, eh?

Try to think in this sense – the note must "sing" throughout; it must "sing" through four complete counts. Keep it as steady as you would sing, hum, or whistle it. Try it now, and concentrate on a smooth, singing, and uninterrupted tone, with the beat as steady as you can visualize it.

"Beat" vs. "Mark"

In the sense of steadiness, there is a means by which you may help yourself. Undoubtedly you have tapped your foot, consciously or unconsciously, to music that appealed to your rhythmic sense. It might have been a march, a waltz, or a "jump" tune. That is what I call "beating time" with your foot, and is not quite what I have in mind for helping you to keep a steady beat. I want you to "mark time"! Here is the difference:

When beating time, you are actually beating out rhythm, as on a drum – down onto the floor. Your foot comes up well enough, but you are unconsciously concerned with making loud contact with the floor.

In marking time, I want you to beat UP as well as DOWN. I want you to establish a halfway mark in the beat, just like the tick-tock of a clock. Imagine a big clock on its side with the pendulum going DOWN-UP-DOWN-UP, and move your toe the same way. In this way you will establish a halfway mark in the beat, which is going to do you the world of good! Your beats will be the same length because you will go to the halfway mark and back each time. You will not speed up nor slow down. Also, you are more apt to get a fullness into your tone, as though you are packing tone into every crevice of each beat. Later, when it comes time for you to start playing eighth notes (two on one beat), there will be no trouble. You will simply play one note on the DOWN and the other on the UP. By then you will have established the halfway mark in your beat. You will have a GUIDE to assist you. This can be a tremendous help, and you will want every means possible to help you develop the accuracy and judgment necessary to good musicianship.

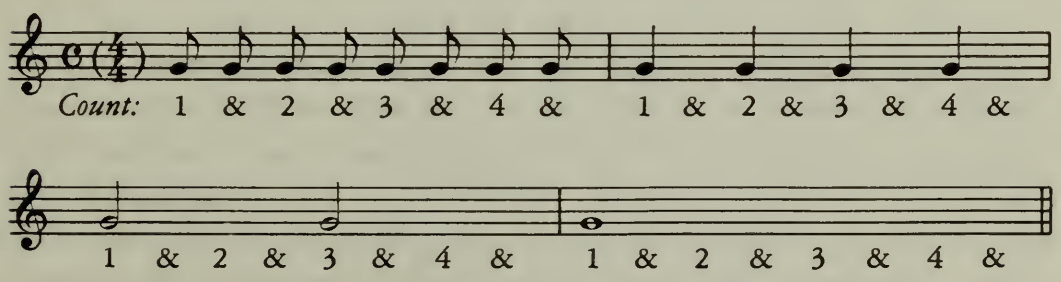
This phase of reading is of such importance that I am going to ask you to spend a few minutes now making *sure* that you have the right idea of keeping steady time and being accurate on your time values. Take just your mouthpiece for this practice. Follow closely now!

First, I want you to listen to some rhythmical music on your radio or recording and beat time to it – yes, just as though you had a bass drum there! Do you notice that you are conscious only of a DOWN beat – onto the floor? And do you see that your foot is *not* going like the pendulum of a clock? That is "beating" time.

Now start your foot going again and say out loud: "DOWN-UP-DOWN-UP" (no music for this). Keep this up now while you watch your foot beat. This does not have to be loud, you may move just the toes inside the shoe. Now the movement *is* like the pendulum of a clock – steady, definite. The halfway mark is obvious, where before there was no halfway mark. And there you have the difference between beating time and marking time.

Take the mouthpiece now and prepare for a note on it. As you tongue the note, so you start to mark time – exactly together. I want you to hold a note for the length of four complete counts. If it will help, you might think, as you play, "ONE-UP-TWO-UP-THREE-UP-FOUR-UP." Try this now. Are you conscious of the halfway mark in each count? Are you marking time, or beating time? Are you keeping track of the count? Is your tone steady? It probably is not steady, so try it again and again. Keep at it; this means much to you.

Now a diagram to show the value, in common time, of an eighth note, a quarter note, a half note, and a whole note:



Bar one shows eight eighth notes – each taking the value of one half beat. (Any further reference in this regard will always be to

beats rather than counts.) The first note starts on ONE, the second on AND, and so on.

Bar two shows four quarter notes — each taking the value of one full beat. The first note starts on ONE and lasts through AND, the second note starts on TWO, and so on.

Bar three shows two half notes — each taking the value of two beats. The first note starts on ONE and lasts through AND-TWO-AND; the second note starts on THREE and lasts through AND-FOUR-AND.

Bar four shows one whole note — taking the value of four beats. It starts on ONE and lasts through AND-TWO-AND-THREE-AND-FOUR-AND.

Note throughout that the starting of one note cuts off the previous note — there is no gap between notes!

Start on your first exercises to use this method of keeping steady and accurate time and, in no time, you will have your values "dead-on."

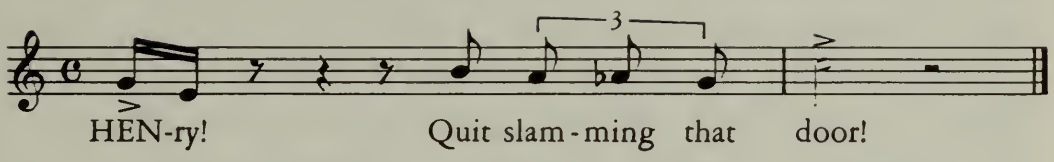
Rests

To indicate silence in music, RESTS are used. They correspond in name and in value to the notes, and, of course, call for the same accuracy in reading.

The first you are to encounter will undoubtedly be whole rests. These are written into your first exercises for the purpose of giving your lip muscles a rest, to give you time to breathe consciously, and to allow you to read ahead and prepare your lips for the next note. However, this is a special case; rests, for the most part, play the same role in music as they do in everyday speech, in prose, or in poetry. They add meaning, emphasis, and color.

You are probably unaware of the momentary silences in your speech, because you employ them unconsciously. If you should suggest to your little brother (for the third time) that he cease slamming the door, you say "HENRY!! . . . . quit slamming that door!" and not "Henry quit slamming that door" (which could imply that Henry had ceased the painful operation). By hesitating between "Henry" and "quit," you hoped to draw his attention, bringing emphasis to the rest of the sentence.

Set to music, the sentence might appear thus:



In this instance of your speech, the silence was as potent as the words. *And so it is in music.* The rests are charged with emotion, and a listener's and a player's thoughts and emotions carry on through them.

When asked what he thought was the most wonderful effect in music, Mozart replied, "*No* music," referring to the eloquent impression produced by sudden silence after sound — in other words, rests. The importance of these signs cannot be overemphasized. They represent as great a part of music as the notes themselves. Take no liberties with rests. Count them — one and all — as perfectly as you count notes.

The Metronome

Mention must be made here of an apparatus devised to measure time in music, a metronome. The most common form is a clock-like instrument, pyramidal in shape, invented by Maelzel a little over a century ago. It has a beating rod in front that may be adjusted to speeds ranging from very slow to very fast, and on some models there is a bell that may be set to strike at every second, third, or fourth beat.

From the use of this instrument came the practice of using the letters "M.M." "M.M. ♩ =60" means "Maelzel's Metronome set at 60 beats to the minute with each beat representing a quarter note." Thus composers direct the speed or tempo at which they feel their composition should be performed. However, since a conductor or soloist will naturally have his own feeling in this regard, the metronome marking is often interpreted rather as a guide than a law. In present-day usage, the "M.M." is often not indicated; "♩ =60," for instance, implies "M.M. ♩ =60."

Writers of instruction books have taken to marking the speeds at which they wish the student to practice. Since most books of this nature are written by authorities in the teaching of their respective instrument, the student is well advised to follow closely to the markings. An exercise marked "♩ =52" is written with a definite purpose and only by practicing at this slow tempo may the student be expected to obtain the desired results. Too, one marked "♩ =144" demands most rapid execution, and the student is expected to stay at the exercise until he may perform it satisfactorily at that tempo.

The metronome was never intended to be used as an aid in learning time values. Use of it as such can be harmful. You are to develop your own *mental* metronome, if you would have accuracy and judgment.

Start now, counting to yourself on the exercises, and keep the metronome in its rightful place – to tell you the speed at which you should practice, and to check, from time to time, whether you are maintaining correct speed. Should your book fail to give metronome markings, I suggest that your first exercises be played at nothing faster than 60 quarter notes to the minute – one per second.

Signs and Expression Marks

Until a few centuries ago, composers did not feel obliged to supply more than the notes of a composition. The interpretation was left entirely to the performer's musical sense and emotion. Then, in the seventeenth century, began the practice of giving a little guidance by marking indications of speed and force; this practice began in Italy. Since Italian music was then very widely circulated, the Italian words and signs became universally known and adopted. Today, they are accepted as conventional technical indications.

You will be introduced to a good many terms and signs in your first study book and your theory workbook. And I strongly advise you to observe each and every one. Whereas they are written into music to assist the player to a more or less standard interpretation, they are used in your study book to assist you in method of practice. Yes, the author of your study book realizes you may

not know how to practice, and so gives directions by means of various markings.

His "Andante," for instance, stresses the need for slow, muscle-building practice. His *"piano"* (*p*) suggests development of that very important soft playing. The *"sforzando"* (>) the *"staccato"* (.), and *"legato"* (-) signs are to promote training and development of the tongue. The *"crescendo"* (<) and *"diminuendo"* (>) suggest altering the speed of your blowing to satisfactorily increase and decrease volume. And so on.

Thus we see terms and signs in your study book as being of the greatest value – practice value! A working knowledge of them is a MUST!

There is another strong point in favor of starting *now* to observe all markings – you have to be *lightning-fast* at reading them in music! Just run your eyes over some composition, and you will see what I mean – a sheet "black with notes and rests" – Allegros, con motos, ritards by the dozen – and fairly littered with dots and dashes! A composition I have at hand shows the following markings: variations in speed, 17; changes in force, 66; crescendos and diminuendos, 78; and symbols suggesting attack, 176!

It might seem well-nigh impossible to you that a person could play this music, observing all the markings, and possibly keeping an eye on the leader of a band. And yet, it is anything but impossible. Joe, down the street, does it on his trombone; Mary does it on the French horn; and you will do it too! Yes, the day is to come when you will pick up a piece of music, look it over for the first time, and play it through with the expression intended by the composer.

You have but one thing to do: *start now to observe all markings.* Get yourself a music dictionary and keep it handy as a reference book. Look up, learn, and put into practice each new term as it appears in your studies. Remember the pre-examination suggested earlier in the chapter. Note all markings, and, if it will help, circle them with red pencil.

In conclusion, let me stress the need for being a good reader in music. More rehearsal time is lost to bands and orchestras, more performances (both solo and ensemble) are marred, more players fail to get jobs through faulty reading than through any other

technical phase of playing. The poor reader is confined in his solo playing, he denies himself the opportunity of exploring all kinds of wonderful written music, and he is a drawback to any ensemble in which he plays.

Think now! By good reading, we mean accurate reading, quick reading, expressive reading, interpretive reading. Make certain your foundation is solid and complete!

You cannot know the tremendous reward for the musician, of whom fellow musicians say, "He reads like a whiz!" "He interprets at sight!" "He reads everything on the sheet!" GO ALL OUT TO MAKE YOURSELF THAT KIND OF READER.

Chapter IX

Intonation

Intonation means "in tone," and, when referring to a brass player, suggests the act of playing in tune; thus we hear of a player's intonation as being good or bad. A critic's report on a concert might read, "Intonation of the brass was excellent," or, "The performer was at times guilty of faulty intonation," and so on. Players use many expressions in this regard, and you will hear in-tune, out-of-tune, off-pitch, off-key, flat, sharp, etc.

True intonation is one thing that the average listener demands of a performer. The experience of listening to faulty intonation is so painful that we will not tolerate it, and it is taken for granted that any brass player appearing before an audience will at least play "in tune." This matter, therefore, warrants our keenest attention. Let us satisfy ourselves on the manner of attaining true intonation in playing:

Q. Will a first-class instrument ensure true intonation?

A. No. Any brass instrument may be blown flat or sharp. While an instrument of good quality is a most valuable asset, intonation rests primarily with the player.

Q. Does true intonation follow naturally with playing experience?

A. No. Some players with years of experience still play with faulty intonation.

Q. Does true intonation present the same problem to all brass players?

A. No. While intonation *is* a problem confronting all, the player blessed with a "good ear" will experience less difficulty in this regard.

Q. Does true intonation depand upon the player's ear?

A. YES! Though the technical element is involved, *true intonation depends primarily upon the ear sensing true pitch.*

In order to play with true intonation, one must "think pitch" — in other words, his ear must sense it. (Pitch, you will recall, is the height or depth of sound.) Many persons have this perception

naturally; some have it in a lesser degree; others, unfortunately, do not have it at all.

You have heard such expressions as "an ear for music," "a natural ear," "a poor ear," "no ear for music," etc. – each suggesting a degree of what we call "pitch sense." Now let us see the extent to which individuals vary as regards hearing music. There are, roughly, five groups:

(a) Those born with "positive pitch." Sometimes referred to as "absolute" or "perfect" pitch, this is the highest degree of pitch sense. It is the faculty of immediately recognizing any note heard, or of immediately singing any note called for, without the aid of a given note from which to reckon.
This extreme degree is a gift, and a rare one. Potentially, anyone possessing such positive pitch might be a good musician, although it does not necessarily indicate exceptional musicianship, taste, or anything else. In fact, there are instances when this person plays at a disadvantage, i.e., should he be a brass player performing with a group tuned higher or lower than the degree fixed in his mind, he would find it difficult to play in tune; he would be obliged to produce every note at a different pitch from what would seem right to him.

(b) Those who perfect a naturally good sense of pitch through training. This person develops good "relative pitch." Given a home note he may sing and recognize other notes. This is not an unusual degree and is one to which every musician should aspire if he would be successful in music.

(c) Those with a "good ear for music." They experience little difficulty in carrying a tune, whistling, or memorizing melodies. All those who play "by ear" depend upon this faculty, and may become very proficient, although somewhat limited.

(d) Those with a vague sense of pitch. This person needs several attempts to sing at any given pitch, and has to concentrate deeply to arrive at it. Through training, however, this sense of pitch may be greatly improved.

(e) Those having no sense of pitch. This person is unable to come within range of any given note.

It will be obvious that those persons in groups (d) and (e) are not suited to the playing of a brass instrument. Their handicap is

too great, and their chance of success too small, to warrant the effort required. Any desire to participate in music would best be fulfilled on some instrument of fixed pitch such as a keyboard or fretted instrument.

It is more than likely that, as a beginner you fit group (c) – an average "good ear for music." You probably hold your own in "campfire singing," whistle and hum pretty well in tune, memorize and recognize melodies easily, and flinch at discordant sounds and off-pitch singing or playing. The fact that you do these things proves a good sense of pitch. You have a reliable ear, and that is all the foundation you need upon which to build true intonation.

You might ask why it should be necessary to "build" true intonation, when you can already sense pitch to a considerable degree. That would be a fair question, and I shall use the best means I know to answer it – a test! Yes, we will imagine you are in my studio, having an ear test. It would go something like this:

I sound the note C, and ask you to sing the scale as you did in school . . . DO – RE – MI – FA – SOL – LA – TI — DO –. Of course, you sing that quite easily–good!

I sound C again and ask you to sing, not the scale, but only the third note, MI. You take a few seconds to mentally visualize the steps up (do, re, mi) and sing MI nicely in tune — very good!

I sound C, and ask for the seventh note of the scale, TI. You take a bit longer this time arriving at the pitch, and finally come out with a good TI– excellent!

Now I take D as the keynote, sound it, and ask you to sing the scale as before. Since the steps of a major scale (do, re, mi, etc.) have a fixed regularity, regardless of the key, you sing upwards from D as easily as you did from C. And, given the keynote D, you are able to arrive at LA, SOL, and any other note that I call for.

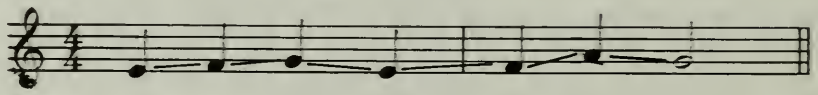
So far, so good! You have done very well, and are probably thinking there is nothing to this ear test. But hold on a minute! Suppose now that I do not allow you time to mentally work out the pitch of individual notes; suppose, upon hearing the keynote, you are asked to *immediately* sing MI, SOL, TI, etc. Can you, on the spur of the moment, sing notes that do not follow "ladder-like"? Not likely – nor would I expect it of you.

The ability to immediately "pitch" single notes of the scale,

when given only the keynote, calls for a degree of pitch sense considerably beyond the average "ear for music." To perform this feat, one must possess either absolute pitch or relative pitch. Absolute pitch, we know to be a gift; a person born with it can instantly identify any note he hears and instantly sing any note called for, even without hearing the keynote. Relative pitch is seen as the development of a naturally "good ear" to a high degree of pitch sense; given a home note from which to reckon, this person is able to recognize and sing other notes instantly.

In brass playing, you must be able to *pinpoint* sounds! Unlike the piano student who has his keys always before him, or the beginning violinist who may at least be shown the exact spot to press the string onto the fingerboard, you have no such guide. Every slide (or valve) position on your instrument allows for the production of not one note, but a whole series! Out of that series, you have to imagine the desired note – it may be No. 2, No. 5, No. 8, etc. – and strike it. And you must strike the right note consistently. While the ball player who bats at .400 may be considered a "wonder," any brass player with such an average of right notes would be a "dud." His "striking average" must be nothing less than 1.000!

To consistently strike the right notes on your instrument, you have one guide – the ear. Yes, the ear alone directs you to notes! Like the singer, you must mentally "hear" notes, make the necessary adjustment (in your case, lip and valve or slide), and strike them. Should there be an error in your sensing of pitch, you could easily blow flat or sharp, "split" the note, or play a wrong note. Off-pitch notes, and split notes are not uncommon among players who lack keen pitch sense, and we frequently hear wrong notes among beginning students. I have seen a student start off on the wrong "harmonic," and, unknowingly, continue on wrong notes. Since embouchure follows any note pattern, like a graph, as:



a cornet player, starting on the next higher harmonic using first and second valves, might proceed as:

All wrong notes!

As in singing, scales and familiar melodies offer little difficulty to the brass student. Here, the average ear can be relied upon to run ahead sensing pitch— wrong notes would be highly improbable — and intonation is not too great a problem. But, much of your playing is to be anything but melodic! At first you will have exercises designed to develop the various phases of playing, and notes will be "all over the place." Later, in band and orchestra, your section may be sustaining chords as background to a melody. You may be on a second or third part, where there will seem "no rhyme nor reason" to the succession of notes. Again, you may have to bring up your instrument after many bars rest and "out of the blue" play odd-note figures, or possibly one note.

Does that answer the question? Do you see the difference between an "ear for music" and an ear trained to good Relative pitch? Do you see that just "getting the right notes" — to say nothing of intonation — calls for a degree of pitch sense far beyond the ability to sing familiar melodies? Let us regard, then, your "natural ear" as the foundation upon which intonation is to be built, and go on from there.

First, I want to give my assurance in this regard:

(a) You need not *ever* play "wrong" notes.
(b) You need not *ever* "split" notes.
(c) You have *every chance* of attaining true intonation in your playing.

While the foregoing paragraphs may have made it appear an almost pheonomenal feat, successful brass playing — which includes true intonation — calls only for a normally good ear and a

program of work. I have shown what *can* happen in the playing of a brass instrument only to impress upon you the necessity of training your ear to a high degree of pitch sense. Players, for hundreds of years, have solved the problem of intonation, and you will solve it too! You will solve it for the same reason that a tennis player spends years developing his back-hand: because it is important to success!

Developing Relative Pitch Sense

It will be obvious that the attainment of true intonation in your playing lies mainly with the development of good relative pitch. While the lips will never learn to play in tune themselves, they will become willing slaves and produce notes as directed by the ear.

Fortunately, there is a key to the sharpening of pitch sense; a key that, while opening to you the possibility of acquiring relative pitch, at the same time offers a definite clue to the method of working at it. The key! *Pitch sense is a form of memory!*

Pitch sense is a form of memory? Of course! How else do you sing the scale (DO – RE – MI –) except through recalling the pattern you sang so often in school? What enables you to whistle and hum certain melodies, if not memory of their sounds? Is it not through pitch level that you recognize a familiar voice on the telephone, the howl of Mrs. Brown's dog, the whine of a jet plane, the whistle of a certain ship, etc.? Yes, in each case you recall former sound impressions.

Memory, we know to be the faculty of retaining knowledge of past events, ideas, or impressions. In the case of sound, it is impressions that are retained. Our ear receives sounds, and impressions are made upon the mind's ear. The extent – the depth – of the impressions varies with our interest in the subject. Should our interst be very keen, the impressions will be deep, and vice versa – little interest, little impression. A deep impression will be a lasting one, whereas a slight impression will soon be clouded over, to be almost forgotten.

Thus, a good *ear* for music suggests a good *memory* of music. The person possessing positive pitch has a phenomenal memory of pitch; and so on down the line.

Do you see that training your ear to a higher degree of pitch sense is simply a matter of improving your *memory* of pitch? Let us see how you are to go about this form of memory training.

The secret of a good memory is *attention.* Attention calls for *mental concentration.* Concentration on sound means *listening.* And so, the first step in improving your memory is training yourself to listen.

Listening vs. Hearing

Here we must clearly understand the difference between listening and casual hearing. Listening is a focusing of the mind's ear upon sounds that are of particular interest to us. Hearing, on the other hand, does not necessarily involve concentration. The organs of the ear receive all sounds within certain pitch limits, through no conscious effort. Whether or not they make an impression upon the mind depends upon the attention given them. Should attention be elsewhere, these sounds may be so completely shut out of our consciousness that we are totally unaware of them.

Listen to the ticking of the clock! Unaware of it until now, the "tick tock" becomes at once vividly clear, when you focus your attention and listen.

We have a similar example as regards sight. As we walk along the street, for instance, many things may enter our range of vision. Unless they be of some interest, or if our mind be occupied elsewhere, they make no particular impression upon the mind. Sightseeing, however, is a different matter. In this instance, we look searchingly at everything within eye range. The impressions received are most vivid; so much so that, years later, we may instantly recall a beautiful garden, a peculiarly shaped tree, an old man's face, and so on.

Listening, like looking, calls for concentration. If we are to make lasting impressions on the mind, we must cultivate the habit of focusing our attention on sounds as we play. *Every note* we play must be *consciously* listened to. We must catalogue sounds to such an extent that, seeing the notes before us as we play, we instantly recall the impressions and imagine the notes in sound.

In order that an impression be left upon the mind for any length of time, one of two things is necessary: the impression must be

very vivid, or it must be revived many times at short intervals. Since there is nothing startling or characteristic about the sound of any one note, we cannot expect a vivid impression upon the mind after a single hearing. And so, for a lasting impression we must depend upon repetition. Yes, time and time again we must play and listen to C, to D, and so on.

Need for Accurate Comparison

This repetition of sound for a lasting impression brings up a point that is very important — that is *mountainous* in importance! Read slowly and carefully! In order that we train our ear to true pitch, which means improving our memory of true pitch, it stands to reason that we must constantly listen to notes *that themselves are true in pitch!*

Do you see the problem confronting the brass student? He picks up an instrument that is totally foreign to him. He is told that each slide or valve position offers a whole series of notes that may be obtained. Out of any series he has to "make" a desired note. To add to his confusion he is told that any note may be played in tune, flat or sharp. With nothing to aid him, may the beginner be expected to play his first notes with true intonation? No! A beginning student may not be expected to strike his first many notes in true pitch. Indeed, with nothing or no one to guide him in this respect, he does well to play just the right notes!

The problem child here is the "mind's ear" — it is no respecter of pitch! Regardless of whether the notes be on-pitch or off-pitch, the mind records impressions. Concentration on these sounds will, with repetition, cause deep impressions. Thus, the student who constantly listens to notes that are off pitch is unconsciously *training his ear* to *faulty intonation!*

YOU MAY BE THAT BEGINNER! Yes, with nothing or no one to guide you to true pitch, you have every chance of playing your first notes out-of-tune and of continuing on faulty intonation! Unless something is done about it.

I wish, here, that it were in my power to put before you some method — some foolproof method — of ensuring true pitch in your first days of playing. If I tell you that a note off pitch will not "ring out" — will not sound pure — I am reminded that some players of

many years experience seemingly fail to recognize these tonal qualities. If I suggest the DO – RE – MI of school days as a guide, you are still at a loss. You need something more concrete! You need a definite aural guide to true pitch. First, you want the sounds of the "open" tones you are to start with. Secondly, you want to check your first notes with notes you know to be true in pitch.

A solution lies in the use of some instrument of "fixed" pitch. The piano or any other keyboard instrument is ideal. Failing that, I suggest you get a pitch pipe, or even a mouth organ. The pitch pipe is a small instrument made specifically for tuning purposes. There are various kinds, some giving a complete octave at standard pitch. They are a handy pocket-size and are not expensive. Whatever you are to use, start now!

The use of such an instrument in your early playing days will do wonders in guiding you to true pitch. Not only will your ear record impressions of true pitch, but you will have something definite by way of sound at which to aim. You will remove notes from obscurity and "fix" them in your mind.

Training your ear in this manner, you will form the all-important habit of, when seeing a note, mentally "hearing" it – adjusting embouchure and instrument accordingly – and striking it! You will, through ear and embouchure, *make* your note in tune, expecting the instrument to only *reproduce* it!

Do you begin to see that "split" notes, "wrong" notes, and faulty intonation need not occur in your playing? They fall to the lot of the careless player who fails to train his ear – who blows at a valve or slide position in a hit-and-miss fashion, hoping the instrument will *produce* a note of the desired pitch! But read on!

Repetition and Association

Now we come to repetition! I have stated that, with there being nothing startling or characteristic about the sound of any musical note, repetition is necessary for a lasting impression. Here I must make an amendment! For a lasting impression, there must be repetition of notes *that are linked in an orderly form!*

To attempt recalling the sounds of thirty or more *unrelated* musical notes would be a hopelessly discouraging task. It would be like trying to remember the names of that many persons to

whom you had been introduced in succession. Given no time to link up each name with some characteristic feature about that person, your mind could not afterward make use of the principle of association. (Association is that condition under which one idea is able to recall another to consciousness.)

The Scale as a Reference Guide

If we are to file away in our minds the note sounds we wish to recall, they must be linked in such a manner that one sound will tend to suggest the next one or more. This has been done for us! Yes, just as the evolution of instruments has provided us with the instruments of today, so has the growth of music given us a definite plan for the basis of our music. From Biblical times music has been based on one form or another of what we know as scales. These varied, not only with the number of notes (as few as three), but with the order of notes as well. Finally, in the 17th century, one scale was accepted as a suitable basis. It was the DO – RE – MI you sang in school – the *major* scale!

The name "scale" comes from the Italian *scala* (ladder) – suggesting a ladder-like succession of sounds. By means of this ladder we climb from any note to its octave above. If we take the C of 256 vibrations per second (abbreviated V.P.S.) as the first rung, we climb by twelve short steps to the octave C, 512 V.P.S.; this is called the *chromatic* scale. These steps are so short we call them *half steps* or *half tones.* Should we progress two rungs at a time, then we play or sing *whole steps* or *whole tones.*

The major scale is made up of both half steps and whole steps, but always in a definite pattern. Regardless of the note on which we start, the pattern of half steps and whole steps remains always the same. This is the orderly form we are to use as a basis for your ear training!

Some features of the major scale:

(1) It is made up of eight sounds – the 8th being the same name as the 1st . . . C-C, D-D, etc.

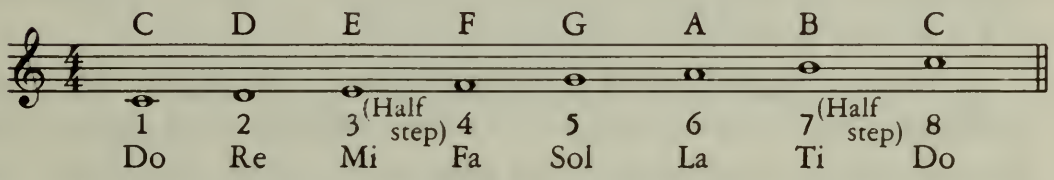
(2) Half steps occur between the 3rd and 4th, and between the 7th and 8th notes; all other notes are one full step apart.

(3) Sounds of the scale may be distinguished by (a) letters – C,D,E,F,G,A,B,C;(b) syllables – Do, Re, Mi, Fa, Sol, La,

Ti, Do; (c) numbers – 1,2,3,4,5,6,7,8 (when referring to *degrees* of the scale).

(4) Each note is related to another by interval. When speaking of the difference in pitch between two notes we say, not the distance between the notes, but the "interval." Considering the scale in the key of C, the intervals from the starting point are:

C– D = a second (C – D)
C – E = a third (C – d – E)
C – F = a fourth (C — d – e – F)
C – G = a fifth (C – d – e — f – G)
C – A = a sixth (C – d – e – f – g – A)
C – B = a seventh (C – d – e – f – g — a – B)
C – C = an octave (C – d – e – f – g – a – b – C)



Let us see how this orderly form of notes can be a guiding force in your plan for developing true intonation:

(1) The Do, Re, Mi, of school days will help to fix in your mind's ear the sound of the scale notes.

(2) By thinking of the gap between notes as you play C,D,E,F, G,A,B,C, you will learn to differentiate between notes that are respectively a full step and a half step apart. Your ear will be led to *expect* smaller steps between B and C, E and F than between C and D, F and G, etc.

(3) You will have the foundation for interval study. Naturally, you are not always to play notes in scalic succession. A passage might proceed C – E — G – A – F, etc. Consequently, you must mentally "hear" notes that are more than a 2nd apart. The interval C – A might prove difficult without you hearing in your mind the note succession upwards from C; and so on.

(4) Through the major scale you begin chord study. You will learn that the 1st, 3rd, and 5th notes of the major scale make up the major chord. Practice on these sounds in this light, i.e., thinking of them as parts of the chord, will lead you to "hear" chords. This is another all-important *must*.

Do you see the necessity of being familiar with the structure of the major scale? Do you see it as a never-changing scheme that will aid you in "hearing" notes before you play? Do you see it as the pillar upon which you may lean for true intonation in all major keys? Then grasp at this "mightiest of all straws." Thoroughly familiarize yourself with the simple pattern, the means of designating notes, etc. Write it out. Tell your mother all you know about the major scale. But learn it!

Theory

Now I have another bit of simple advice for you — advice that my father impressed upon me when I started. This is it: "Get yourself a theory workbook, and get it now!"

To know how to control breathing, how to form your lips how to tongue, etc. is not enough. You are studying your instrument for one reason — so that you may play music. Then should you not know something about music? Yes, you want, and *need*, some knowledge of music.

Music, as a science, is based upon certain laws, and these laws are linked into what is called the theory of music. In order that you practice intelligently, you must know what you are doing; you must recognize the notes before you as part of a plan. A theory workbook will provide, in an easy, step-by-step manner the hundred-and-one things you need know. *Two minutes a day* will suffice to keep your theory along with your practical work, and your practical work will benefit from the knowledge gained. You will *know* what you are doing, instead of shooting in the dark!

Among the laws you will study in a theory book are some that will aid you further in developing true intonation in your playing. You will learn, for instance, how to make up the major scale in all keys — your guide to hearing notes in all keys. You will learn to recognize the difference between a "major third" and a " minor third." While the intervals C-E and E-G *look* alike — both thirds — the former is a major third and the latter a minor third — four

half steps as against three half steps! You will be introduced to a near relative of the major scale – the minor scale. Chord formation will follow, and so on. Through writing scales and playing scales, writing intervals and playing intervals, writing chords and playing chords, you will help your ear to sense true pitch.

There we have it! True intonation in your playing boils down to *you,* and your *ear.* I say *you,* because first of all you must *want* to play "in tune." The rest is simply a matter of using every known means to improve your pitch sense. Make sure you start with notes that are true in pitch, learn your major scale in the key you are to start with, know your intervals, and you are well on your way to the development of true intonation!

Now let us sit back for a minute and look over this subject of intonation. Here are the main points:

1. You must play in tune.
2. Playing in tune depends mainly upon the ear sensing true pitch.
3. Sensing true pitch comes with improving an "ear for music" to the degree of good relative pitch.
4. The key to sharpening pitch sense: "Pitch sense is a form of memory."
5. Improving memory of pitch depends upon intense listening.
6. First notes listened to must be true in pitch (piano, pitch-pipe).
7. Repetition of notes in an orderly form is necessary for a lasting impression.
8. Major scale is to be used as an aid to ear training.
9. Start immediately on a theory workbook.

It remains now for you to go to work. You need not wait until such time as your register will permit the playing of a complete major scale to make use of the pattern. Start on your first exercise. Mark in pencil the half steps, the whole steps. Sing up, "DO-RE -MI" to arrive at the sound of notes ahead. Work on only a few notes at a time – there is no need to play your first exercises without stop. By working in this manner you will not only stand a good chance of playing the right notes quite well in tune, you will save yourself time – weeks and months. You will be practicing with purpose!

And now, good luck to you! Good intonation is to be one of your

most valuable assets in the music world. You will get more credit for this feature than for a "blinding technique." Critics will compliment you on your fine intonation. Musicians will say of you (and there can be little higher praise for a brass player) "Here is a man who plays in tune."

Chapter X

Tone Development

Try to coax a brass player away from his favorite instrument; try to sell him on the idea of changing to another instrument where good tone is ready-made, where it is impossible to play flat or sharp, where there will be no need for long hours of *crescendo* and *diminuendo*. The answer will always be the same: "Once a brass player, always a brass player."

No one, having tasted the thrill of creating tone, of building from a first unmusical blast to a sound both vividly alive and beautiful in quality, can be satisfied with another type of instrument.

Whether it be the sonorous tone of the tubas, the noble tone of the trombones and baritones, the sometimes mellow, sometimes strident voice of the horns, or the brilliant sound of the trumpets, tone reigns as the supremely appealing characteristic of brass instruments.

Some listeners are content in the hearing of brass tone, and have no particular desire to go beyond that point. To others, such as you and me, it is as though there is some indefinable quality that beckons. It strikes a chord within us. We feel the compelling urge to make that tone ourselves.

We are in this sense like a gardener. He cannot be content to merely admire flowers; he must grow them himself. To him, each seedling is potentially a beautiful flower at maturity. Its growth is to depend largely upon him – upon his knowledge and care. To him, each seedling is a challenge – a challenge to his patience and perseverance.

Tone is our challenge. We too start with a seedling – a seedling of sound. It blurts and coughs, comes in fits and starts, sometimes resembling not so much a musical sound as the bawling of a lost calf. That is the sound we are to transform into thrilling tone! And yet its outcome is no more miraculous than is the growth to flowerhood of a lone and puny seedling. The gardener is confident that his seeds will grow. We are confident that our tone will develop. Like him, we require some understanding of the points con-

nected with development. And we most certainly have need for his patience and perseverance.

Tone from Technical Development

Tone is to be seen as dependent upon technical development. One may have a love of the beautiful, a sense of artistry. He may have a clear mental picture of the tone quality he desires in his playing and yet never attain that tone through a lack of development. In this respect he might be likened to the artist who has not sufficient ability with oils and brush to capture on canvas the pictures of his imagination. Musician and painter, sculptor and architect – all are dependent upon the development of the technicalities involved in their art.

That is an encouraging thought, don't you agree? There is no need to be envious of another's beautiful tone. There need be no despair, no wondering if good tone can be had. With tone broken down into technicalties, we know how to work at it. We know the recipe for its development: good work habits! With a proper start, daily attendance to the fundamental points, and patient work, we can be assured of a resulting good tone. Let us examine now the work habits that will produce good brass tone.

First, in good habits must come the practice of listening. It is by listening to good tone on radio and recordings that we get our pattern for tone. It is by listening to our own tone – listening for imperfections and listening for quality – that we bring about self-improvement.

Listening we have seen as involving *concentration on sound.* This we must keep in mind. To get into the habit of merely "hearing" our playing – "In-one-ear-out-the-other" – would be a waste of time. It would also be disastrous to our chances of building the tone we want. We must *listen* with what the Germans call *gespitzte Ohren* – "sharpened ears." We must concentrate on our sounds till every imperfection stands out like a mountain. And we must strive always for quality.

The "Tone Bath"

A daily "tone bath" is the next habit. This is to be a period –

somewhere in your daily practice session — where you concentrate upon tone, and tone only. It is not necessary to read or count during this practice. You are to give your full attention to tone — just playing and listening. Sit down if you like. It may help you to relax. Close your eyes and listen. Concentrate on sound alone.

This practice will involve, not a succession of four-beat notes as in your exercises, but single-note studies — sustaining each note and listening to it. You will play each note of your immediate register many times. You will play, listen, criticize; work for improvement.

This is where your patience is needed; no mistake about that! Tone grows slowly, like the seedling. Its growth must be natural; it cannot be hurried. Do not expect to see it grow. I recall an elderly musician saying to me one day, as I went about my usual tone practice, "Keep that up, son; one day you'll wake up and find yourself with a tone." I had only been doing tone practice daily for four years!

Tone practice can be interesting, if *you* are interested. Instead of looking for interest, you must put interest into the practice. Instead of just hearing your tone; listen. *Really* listen! Decide now to iron out all the imperfections keen listening will uncover. Listen to recordings of the finest artists; keep that pattern of good tone with you. Go to the work that will one day give you that tone!

Starting and Stopping Tone

And now for the points you will want to concentrate on during your tone bath. Suppose we consider first the starting and stopping of a note.

When starting a note, the effect you want is SILENCE followed by SINGING TONE, as though the note *appears* "out of the blue." At first, notes may start with an unnatural bulb-shaped sharpness, then come down to natural sound. Sound here is at least immediate — that is good! With practice you will cut down on the abruptness of the attack and produce singing tone from the very first.

Notes may fail to sound out for a split second after tonguing — the first actual sound being one of escaping air. This "breathy" start is caused by failure of the lips to vibrate on withdrawal of the tongue. You may remedy this flaw by making certain that the

lips are kept together – pressed together – in proper vibrating formation, and with a flicking back (rather than a casual withdrawal) of the tongue. Imitate a snake's tongue. Make your tongue dart, flick – quickly and lightly.

It is most important that your notes sound out immediately as you tongue. Better now that they sound a trifle too sharply. You will remedy that with practice – *tonguing* and *listening.*

The stopping of a note should sound natural – never forced, nor clipped. To stop a note, *you simply stop the flow of air by closing your throat;* not gradually, for you want the tone to sing all the way, but right to the end, with no tapering off. You want the effect, SINGING TONE – SILENCE.

Do not use the tongue to stop a note! This gives an unnatural, choked-off sound to the note, and must be avoided. Try for yourself this wrong method of stopping a note, by using the tongue as in "TUT" to close off the flow of air. Now try the right way – no tongue movement at all. Just close off the flow of air by an effort of the will. Do you hear the difference? One way sounds unnatural, harsh; the right way sounds natural and musical. This is an easy habit to develop, and well worth any effort on your part.

Considering the starting and stopping of a note, you must work for the effect:

SILENCE – SINGING TONE – SILENCE.

And now for tone throughout a note. Accuracy of pitch is one of the principal factors going to make up good tone. Do you recall that satisfying WHACK as you caught a baseball right in the center of your mitt? And what about that thrilling CLICK sound of bat on ball when you connected just right and sent the ball out of the park? In both cases it was "just right." And so it is with tone. Hit a note off to the side and it can't sing — no matter whether you blow it softly or loudly. It must be "dead center."

In this early stage of playing, when your ear may not be too dependable, keep checking your pitch with a piano or pitch pipe. Also, take plenty of time forming your lips before you tongue. Do not make the mistake of snatching a last-minute breath and blowing against lips that may not be "set" for a note. Take your breath, form your lips, try to "hear" the note you are to play, then tongue

cleanly. Practicing in this manner, you will be more apt to strike a note cleanly – with good intonation – rather than sloppily and tending to blow flat or sharp. Try to make every note "ring out," and know that it can do so only if you hit it "dead center"!

During early development, tone is apt to be jerky. Your tone may come in fits and starts, like:  , when you want it to flow as,  .These jerks or breaks in the series of vibrations may come as the result of muscles that are undeveloped, varying in tension. It could be nerves. Or, the condition might result from improper breathing. Lack of muscular control is likely to show up in the mirror as you sustain a note – a quivering of the muscles about the mouth. There is little to worry about here as muscle development will bring proper control.

Nervous tension may bring about interference with full muscular control. Here again, experience will eventually bring about confidence and relaxation.

Breath Support

We come to breathing, the most likely offender. If you are not supporting your tone with an intensified air column – if you are not controlling the flow of air from the lower part of the diaphragm – there is your trouble! Check your breathing now and try the note again. At the first jerk in the series of vibrations, STOP! That is the end of your *controlled* tone. Start again on the same note, and try to keep it steady for a longer period. You are bound to get results in this way. You will arrive at the point that you may keep a note steady and controlled for the duration of a breath. That evening out of tone will improve day by day. Keep at it!

Tone quality depends largely upon the two factors: proper breathing and an open-throat condition. Breathing has already been discussed in some detail; keep it in mind throughout this tone practice. Remember that breath is the life of tone; treat it accordingly. You will have ample time now before starting each note to think of your breathing, and there is one point to watch for. The mouthpiece should be in position; you take your breath quietly. Now, at the end of your inhalation, form your lips, and

tongue. DO NOT WAIT! Waiting tends to bring about tension. Tension is tone's worst enemy. Think of starting your tone on the *crest* of your breath.

An open-throat condition is brought about partially by *erect position of the head and neck,* and *expansion of the chest.* This draws the larynx or Adam's apple downward and forward, thereby inducing a more open throat.

Try this experiment for yourself. Assume a good standing or sitting position, with head and neck erect. Place a finger on your larynx, and take a deep breath. Note that, as your chest expands, so does the larynx move downward and forward. Other important adjustments which promote the open throat are (a) the tongue forward in the mouth in a pliant, supple condition; (b) the facial muscles free from tension.

You will find it helpful to sing the vowel, "AH," and then try to keep the same tongue and open throat condition when you play a note. If you work on the note "C," I suggest you sing "AH" to that pitch (avoid stretching lips). Then work for the same quality on your instrument. Strive for a feeling of depth. Avoid stiffening of the tongue and any tension of the facial and neck muscles. Proper breathing and an open-throat condition are all-important to tone quality. Give them most serious attention!

Windy Tone

Wind in the tone will be another fairly obvious imperfection. You will recall from the chapter on embouchure that wind goes into the instrument through portions of the lips that fail to vibrate as you blow. You know that the instrument is always full of air, and that your breath is only to set the lips in vibration. Flexibility is the solution, and this is brought about by further loosening of the lips. As mentioned before, you may find that a daily application of vaseline or cocoa butter will help to loosen the lips and keep them in a soft, vibrant condition. The loosening buzz at odd times during the day, and before starting to practice, is again recommended. Also, starting off your practice softly in the low and middle register will bring your lips to the point that they can vibrate freely.

And now one final point in regard to this tone practice: AVOID

BLASTING! Let your motto be, "QUALITY BEFORE QUANTITY." Learn to play softly first. Strive to make your tone pure, unforced, and agreeable. Think more in terms of resonance than volume. Volume will take care of itself. You are building your powerhouse through your daily exercises on proper breathing. And, when the time comes for you to play loudly, you will play loudly *without distortion*. You will get your power from the region of the diaphragm, and you will maintain the same condition of the throat and tongue as when you play softly. You will merely amplify the good tone you develop through playing softly. It takes a good musician to play softly; anyone can blast! Keep this thought in mind.

Chapter XI

Register Development

Register is a common word in the language of music, and you will hear it in reference both to instrument and player. In effect, it means a portion of range; thus, we refer to registers as "upper," "lower," "middle," etc. according to what part of the instrument's compass we are discussing.

Brass instruments have a point below which no one, not even a superman, can produce a note. However, there is no theoretical upper limit to range. Hence, in speaking of the register of an instrument, we cannot correctly refer to it as being "complete"; we can but settle upon part of the range as "normal register," i.e., that which we expect of the usual player, and "extended register" — notes above or below this average compass.

Used in reference to a player, register suggests the range of notes he has at his command, his "playing register." This does not include notes hit on an occasion, but is the range of notes he plays dependably, in tune, with varying degrees of volume, and with reasonably good tone quality.

It is apparent that playing register will vary with the individual. The accomplished player, arrived at a high degree of development, will have as his playing register at least the normal compass of the instrument, and very likely a good portion of extended register. A young student will have a comparatively small playing register. While he will work daily on as wide a range as his stage of development warrants, his actual playing register, the register in which he plays comfortably, will be considerably less.

Register Limits

The wise student will recognize the limits of his playing register, and will confine his solo or ensemble playing to music within it. Too often we find a player attempting music outside the range in which he can play creditably. Poor performance is the result, and reveals "split" notes, poor intonation, strained tone, etc.

This brings to mind a trumpet player I met some years ago. He

could, on occasion, produce all the notes from low F sharp to the second D above the staff – a range of almost four octaves. This would have been a commendable feat, had all the notes been within his playing register. But, unfortunately, such was not the case. Only in the dressing room was he ever heard to reach these extremely high notes, and then only by laboriously climbing up, one note after the other. He could not play the D at will, nor, indeed, any other of these stratospheric notes, nor had he any control over them. Also, he frequently "split" A and B just above the treble staff during ensemble playing. Therefore, the notes that he could occasionally "hit" and the notes he actually had at his command varied greatly. His playing register was closer to two octaves than four; he was a "dressing-room player."

Many students go into the development of register with a faulty impression. They cherish the idea that top notes are all-important, and that the ability to play them is a criterion of playing. Nothing could be farther from the truth! Nothing, furthermore, could be more disastrous to embouchure development. I am convinced this misunderstanding has been one of the greatest undermining influences leading to frustration and ultimate failure on brass instruments.

This top-note trend apparently stems from the great attention given modern dance bands. The young student constantly hears these brass players (particularly trumpet and trombone) as they "skyrocket," and that becomes his ambition. What he fails to realize is that performance in this extended register calls for advanced development of all the factors going to make up brass playing, and that these star performers have first put in years of hard work.

The young student attempting these high notes prematurely is *certain* to ruin his chances of ever playing well! With only a weak beginner's embouchure to aid him, he must resort to extreme pressure on delicate lip tissues. He stands the same chance of injury as might befall a beginning weight lifter straining to lift beyond his power.

Let us face the fact that high-note playing is specialized playing. It calls for tremendous embouchure development, chest power, and a well-developed ear. These are sufficient to place it well into a student's future.

Before leaving high notes, you may be interested to know that at one time in history there actually were "high-note specialists" – performers who played nothing but high notes. They had good reason, however, it was only in this part of register that melody could be played! (See page 110 of Appendix 1.)

The Practical Approach

And now let us take the common-sense approach to this part of your study. If you are to get any real enjoyment out of music, and if you are to be an asset to any musical ensemble, then you must have a playing register equal to the music you will encounter.

Your participation in music will be much the same as a person taking up skiing. As a tyro, the skier confines his attempts at navigation to very mild slopes. As he gets onto the "feel" of the skis and acquires some degree of balance, he has fewer falls, and manages these slopes with comparative ease. The thrill now is tremendous! But, is he satisfied? No! The steeper slopes beckon. He sees more experienced skiers flying down from dizzy heights, zig-zagging in slalom, jumping, etc. That is for him! Away he goes on a steeper hill – riding and falling, and riding again – till one day he manages that hill too. By this time he is an avid ski fan. His enjoyment increases in proportion to his skill on the skis. The more skill, the less confined he is on choice of hills.

Your start in music follows the same pattern. You grope along on your first few notes, getting the feel of the instrument. Finally you become confident, and the big day arrives. With five notes at your command, you play "Lightly Row" or "Jingle Bells" – your first melody – the first time you actually "make music." Your thrill is tremendous, probably greater than when you may play a concerto one day. But you are not satisfied to rest with such melodies. Others beckon; you are on fire to play something better. To do so you need more notes at your command, and away you go at the work that will give them to you. With an octave, you play Brahm's "Cradle Song," the "Marine's Hymn," and others. By this time, it is obvious to you that the greater enjoyment lies in the more advanced grades of music, and that they call for a wider playing register. And so, the wider your playing register, the less confined you will be in music.

As for ensemble playing, it stands to reason that you can be an asset only provided you can hold up your end in the brass section. Any band or orchestra may be considered a "big instrument," with each player representing a key. Provided each key works dependably and tunefully, the instrument is capable of providing music well played. You will be a key in any group with which you are to play, and you will be expected to perform creditably upon the part given you. You may be asked to play the "high" part, it may be the "low" part – you do not know. But you must be prepared to play *any* part, at any time. That is one sign of a dependable player.

To best get the idea of a necessary playing register, you might look through some of the better solos written for your instrument. You will see that, over the course of a few solos, the whole of the normal compass is utilized.

A composer writing for your instrument takes into consideration not the individual's playing register (which is often very limited), but the normal and sometimes the extended register of the instrument. In other words, he writes for the instrument, expecting that the player will have developed a sufficiently wide range to warrant playing the music. This is only logical, don't you think? If you cannot play it, there is certain to be someone else who can.

When we say that we "play" a trombone, a trumpet, a tuba, it should be with the inference that we have a wide enough range to handle the music that might be put before us. The statement should suggest that we are prepared for anything within at least the normal compass of the instrument. Else, why call it normal?

Now you are "studying" your instrument. When the time comes for you to go into solo and ensemble playing, let it be that you may proudly say you "play" your instrument!

In this early stage, register development is coupled with embouchure development. Chest power will be needed later for the high notes, and for this you are preparing – with regular breathing exercises. The low and middle register notes you start with, however, depend mainly upon embouchure.

Your work, then, will parallel that of a young weight lifter. He is given a light bar bell which he is told to raise until a tired feeling is experienced, and only to that point. Then a rest is needed.

Again he goes on with that particular weight, working until the muscles are tired, then resting. Perhaps after several weeks, when there has been sufficient development to warrant a forward step, a few pounds are added, and he proceeds as before. Though his muscles may not be seen to develop day by day, development there is – slow and sure. He goes on with his ever-increasing weights – working, resting – until one day he has that tremendous development of which he dreamed. He arrives at his goal by following the simple rules that lead to development of any kind – each step in turn – perseverance, faith.

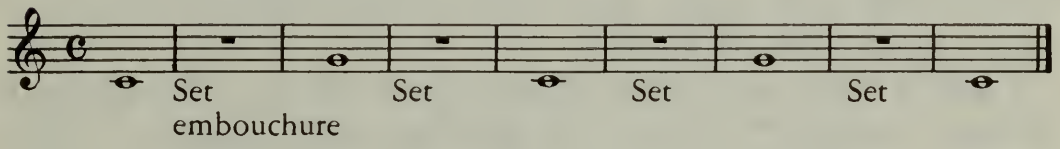
As the weight lifter has a bar bell for exercising his body muscles, you have note studies for exercising your embouchure muscles. Think about that for a moment now! *You have note studies for exercising your embouchure muscles* – a simple and logical statement. But, do you get the full meaning? I didn't! I thought that playing an exercise correctly – which, to me, involved hitting the right notes and holding them for their value — was all that was necessary. I was ready for the next! Without giving thought to development and the fact that I might be straining to get through certain studies, I frequently came to some that really gave me trouble. I used to wonder about this. It seemed unfair that a book should lead me up to an exercise that I wasn't able to play. I recall thinking that the book wasn't well enough graduated. Then I was shown my folly! I had been like a weight lifter who wanted a heavier bar bell because he was able to *lift* the first one. It hadn't occurred to me that each exercise called for a certain amount of development, *development that would prepare me for the next.*

So, take a leaf from my notebook! Once you can *play* an exercise – go to *work* on it! Play it again and again, and in this manner: practice . . . rest . . . practice . . . rest. One important point here: keep in mind that you are still practicing *music* exercises, not just muscle-building exercises. Throughout your repetitious practice, continue to strive for a more musical sound: better breathing, better attack, better tone, etc.

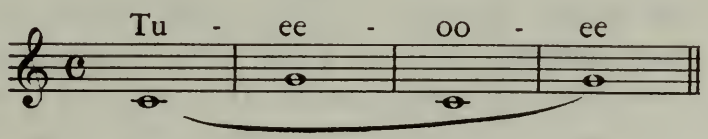
Apart from the regular studies to be found in any study book, there is one good muscle builder I would recommend– harmonic practice. This is where you use your instrument like a bugle or,

rather, seven bugles, since each of the seven valve fingerings on slide positions offers a whole bugle-like series of notes that may be obtained.

Here is the way to go about this practice. Start with whichever position or valve combination the notes come most easily to you, probably nothing very low at this stage. Sound your bottom note – make sure it is good before leaving it; pause while you set your embouchure for the second note of that series, and try to strike it "on the nose." Sustain that note long enough to fix the pitch in your mind, set your embouchure for the bottom note, and strike it. Practice these two notes a few times in this manner, then rest. Your rest need not be long – possibly five seconds or so. Continue with this practice. Here is an example of the exercise as written for a cornet player using no valves:



A variation of this exercise may be found in slurring, as:



Here you tongue the first note only. The curved line suggests that the notes are to be played in a smooth, gliding manner; the tone is to flow continuously from the first to the second note. This is accomplished by a sudden adjusting of embouchure – so sudden that the second note will seem to "pop out." The point to watch for here is that you do not allow the tone to drag from one note to another – a distortion of sound. That may easily happen at first,

but continued work, greater flexibility – coupled with keen listening – will produce the smooth, flowing sound that is required.

These exercises involving two notes of a series may be practiced in all seven valve combinations or positions as your embouchure develops. It will not be long before you are able to play all seven possibilities, and then you are ready for a heavier "bar bell." Yes, you may proceed with three notes of each series. Start from the lowest series and work your way up: slowly . . patiently! It would be a good idea to start each day with the two-note exercises, work your way down, and come up on the three-note series. Working down will help loosen the lips, giving the condition you want for higher notes: *flexibility.*

Throughout this "bugle" practice, keep in mind these words of advice: NEVER LOUD . . . NEVER FAST . . . NEVER FORCED. Print them on the walls of your practice room where you are bound to see them daily. Working in this fashion, your muscles will develop slowly and surely. And with this development will come your register. Slowly! Surely!

Look at those two words: *Slowly* need not be a discouraging thought. After all, to become a good all-round player, you must develop on the other phases of playing as well. You have breath control to develop, tonguing, reading, ear training, tone – all of which take time. You have much to think about and work on during your daily practice, so the slower you proceed, the better chance you have of developing on all phrases.

Surely is the bright thought, to keep your morale high and to strengthen your purpose. We all know that work properly done must produce results – it cannot miss. You are sure to reach your goal! Thus, one word suggests the method for work. The other suggests certainty of success. Keep this thought with you!

Seek Knowledge: acknowledge your ignorance and grasp every opportunity to learn. Look for criticism, and never be ashamed to ask questions.

Form Good Associations: choose your company wisely. Avoid those who would undermine your resolution. Seek those who will stimulate you to better efforts.

Keep Your Aim High: know that enjoyment in music goes in direct proportion to ability. Like a sunflower reaching to the sun, aim high – up and up.

Welcome Difficulty: recognize difficulties for what they are – stepping stones along the way to test your will. Once surmounted, they will spur you on.

Have Patience: stick by your guns. Know that then you will attain your goal, however long the road, whatever the difficulties.

Have Courage: fortify yourself with firm resolution. Stubborn resolve will bear you up when strength is needed.

Have Faith: know that success lies within you. Know that firmness of purpose and perseverance are prerequisites of success. Cast doubt from your mind and believe in yourself.

And now to work! Opportunity lies before you; make the most of it.

I have the greatest respect for you at this moment. I know that you can succeed.

Show the world that you can.

Appendix 1

A Brief History of Brass Instruments

The ancestors of our present-day brass instruments were made from the horns of animals; an opening was made at the pointed end and served the purpose of the mouthpiece of today. The French horn, as well as the alto and baritone, still retain the name "horn," and the word "cornet" is derived from the Latin word for horn, *cornu*. In informal modern parlance, musicians apply the term "horn" to practically any wind instrument – trumpet, saxophone, or whatever.

The early horns played a great part in the communal life of primitive man. Not, we can think, in the sense of giving artistic pleasure as in music of today, but for calling together the tribes, sending warnings, and, later, as an attendant at ceremonials and rituals.

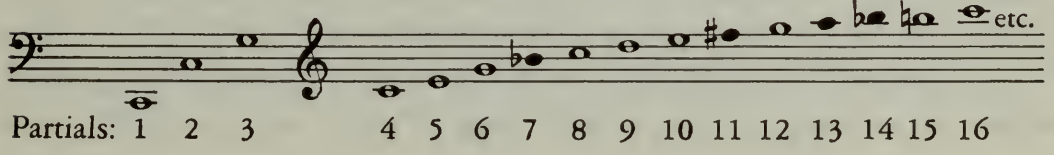
We cannot be sure just when trumpets came into being. Biblical references, early engravings, and museum relics would indicate many hundreds of years before Christ. Specimens of bronze, trumpet-like instruments dating back to the Bronze Age have been found in Denmark. Silver trumpets were said to have been issued to the army of the Israelites; we are told the walls of Jericho fell at the blast of trumpets. The Greeks were known to have held trumpet competitions as an event in the Olympic games as far back as 400 B.C.

Roman engravings show various sized trumpets; the small-bore *lituus*, the somewhat longer *buccina*, and the large circular trumpet known as the "tuba." The latter, with bell facing over the shoulder of the player and supported by a straight brace, was obviously the forerunner of the bass instrument centuries later known as the "helicon" and, still later, the "sousaphone" named after the American Bandmaster, John Philip Sousa.

Historians differ on the advent of the trombone, with some claiming it to have been in existence in the times of the Romans and earlier. The ancient name for trombone was "sackbut," de-

rived from the French word *sacquebute*; literally this means "pull-push" and was applied to a medieval hooked lance.

It was very early found that any difference in size of instrument accounted for a change in pitch; that is, the larger the instrument, the lower the tone, so experiments led to horns and trumpets of all sizes and shapes. Each instrument was capable of producing only one group of notes, and, for centuries, the only method of producing other than one was that of changing to a smaller or a larger instrument. These notes come from what is called the "harmonic" or "overtone" series, which it might be well to explore at this point.



The lowest C represents what is called the "fundamental"; the notes above show its harmonics or overtones. The series continues on upward – theoretically indefinitely – but this much of it is enough for our present discussion. For convenience of reference the notes are numbered as "partials," with the fundamental being numbered as one and the overtones, from two on up. The harmonics represented by black notes are considered out of tune by our present-day standards; we have "tempered" our scale to eliminate them.

Most of today's brass normally produce the partials from 2 on up. The upper limit is partly determined by the relationship between length of tubing and width of bore; in general, the narrower the bore, the easier it is to produce the higher partials. Further, this upper limit is dependent upon the skill and development of the player. The fundamental (1), when playable, is called a "pedal tone" and is considered outside the usual playing range.

To go back to the brass of ancient times, they could produce only the notes of a section of the series. A survival of this sort of restriction is found today in the military bugle – the only present-

day brass instrument without valves or slide. Its only notes are partials 3, 4, 5, and 6; referring back, you will recognize the note pattern from which all Army and Navy bugle calls are derived. Of course the actual notes are higher, since the bugle's fundamental is higher than the C we have been using as a sample. Furthermore, some part of the series constitutes what we call "open tones" of our modern instruments, i.e., notes we can play without use of slide or valves. Again, the actual pitch of the notes will depend on the length of instrument, and the consequent higher or lower fundamental.

The history of brass-instrument development – dating back to the tenth century – from primitive forms to present near perfection is mainly that of the attempts to bridge the gaps between the notes of the harmonic series. The natural tones were sufficient for utilitarian purposes, such as calling soldiers to battle or huntsmen to the chase. However, if the brass instruments were to share with others in music as an art, a full range of notes was needed.

The Slide

The first of the brass group to solve this problem was the trombone. With its slide in closed position, it produced a series of notes; as it was extended, the tube length became longer, thus producing a lower series. Hence, any note not found in the series with closed side could be found in a series produced by one of the extended positions. (See page 42.) It is interesting to note that the trombone remains today mechanically the same as it was considerably before 1500 A.D., and has resisted the various changes and improvements which have updated the other brasses. The slide still remains the most perfect mechanism for altering the pitch of a brass instrument because any fault of intonation can be corrected by adjusting to perfect pitch, while other devices so far discovered create some notes that are out of tune.

It well might be asked (many people *have* asked), "If the slide is considered 'perfect,' why wasn't it adopted by the other brass, not just the trombone?" Well, the answer is, simply, that the device was tried on other instruments of the family, but found wanting. In the case of the trumpet, the *tromba di tirarsi* ("trumpet to be pulled out") was an attempt to adapt the slide to the trum-

pet, but eventually was abandoned. In the first place, the higher instrument demands faster execution; you will note that a high soprano voice can skip around like a flute, whereas we don't expect such agility from a bass singer. Likewise, while the slide mechanism can provide sufficient mobility in the trombone range. it cannot execute the more rapid high passage work demanded by the music of the period when the trumpet's improvement was being attempted, nor – surely – the music of today. One attempt to rectify this was a British invention which had a spring to return the slide to its original position, but this disturbed the player's embouchure. As for the horn and larger instruments, the physical problem of attaching a slide so that a human arm could manipulate it defied the inventors of former times and no longer concerns those of today. As a final observation, it should be noted that slide trumpets and cornets are still being manufactured, but mainly for use in novelty effects where the "*whah*" of the slide glissando is wanted.

Holes and Keys

Meanwhile, other experiments to close the gaps were going on, and inventors turned to the wood winds for inspiration. This family alters the length of tube by having a series of holes bored into it; with all holes covered, the lowest note is sounded and as the holes are uncovered, one after the other, the tube is shortened and higher notes are produced. Use of this principle gave rise to two groups of instruments, the cornett and key-bugle families, both thus related to the wood winds, but similar to modern brass in their use of cup-shaped mouthpieces. By the way, "cornett" is not to be confused with "cornet" as we now know it; the latter was not invented until a little more than a century ago.

The difference between the two families is as follows: in the cornett family, the first octave (eight notes, as C to C) was obtained by successively uncovering the holes, and the second octave by doing the same and overblowing (using increased wind pressure). The cornetts had six finger holes and a thumb hole behind. On the other hand, in the key-bugle family, each note obtained by uncovering the holes gave rise to a whole series of notes – as when we lift a valve on one of our valve instruments. Though

both families have affinities with both woodwind and brass, the cornett family leans more to the side of the wood and the key bugle, more to the side of the brass.

The cornett family ranged from the small treble cornett, either straight or slightly curved, to a slightly larger one, and on to its bass members, the serpent (resembling a snake), the bass horn (not a horn, but a slightly improved form of the serpent), and the Russian bassoon (resembling a bassoon only in appearance), a variety of the bass horn, as above.

Passing to the key-bugle family, we find the various sized ophicleides (resembling the bass horn and Russian bassoon in appearance), and the small treble keyed bugle (resembling our bugle of today).

Both these families were eventually abandoned because, although they made scales, even chromatics, possible, they required the tone to pass out through the side holes, thus robbing the instruments of the brilliance and nobility of tone resulting from the full tube with the flared bell – the survivors of the earliest "horns."

Evolution of Shapes

Throughout the evolution of the brass family, there was effort to attain longer length of tubing while still retaining some degree of portability. Evidence of an "S" shape applied to the trumpet is found as early as 1400; this evolved into the snake-like serpent, the bass of the cornett family we have discussed, and which did not completely die out until the nineteenth century. The trumpet achieved essentially the shape it retains to this day somewhere around 1500.

Meanwhile, during this period, the hunting horn acquired the circular shape we see in present-day horns. In both horn and trumpet the longer tubing, along with narrower bore, gave access to higher partials of the harmonic series and, if you refer back to it, you will note that at the highest portion illustrated, the over tones are close enough together to permit of some scalewise melodic playing. In the case of the horn, this permitted more participation in orchestral playing. This range on the trumpets, however, was – and is – most difficult and led to the development

of "high-note specialists." These were highly respected artists; not only was playing below this register considered beneath their dignity, but the ordinary, run-of-the-mill trumpeters were forbidden to venture up into their exalted range. To appreciate the difficulty of such performance, you have but to imagine playing melodies (not bugle calls) on one of today's valveless bugles. While not to this extreme extent, specialization still exists in brass sections today. The first-chair player, constantly assigned the highest notes of the group, naturally becomes accustomed to the higher register of the instrument. On the other hand, the third or fourth player's embouchure becomes adjusted to a lower range. Modern players, however, are supposed to have sufficient command over their instrument to be able to play in any register when occasion demands.

In the case of the horn, the circular shape brought another factor to bear; it was found that introducing the hand into the bell could vary the pitch as much as a half tone. This permitted rectification of out-of-tune harmonics plus production of half steps between the natural whole tones. In effect, then, the upper range of the horn became a chromatic instrument on paper, but in sound the notes produced by "stopping" were of different tone quality and were used but little in melodic playing – their employment was mostly reserved for inner harmonies. It is interesting to note that even after valves were introduced, the role of the right hand's regulation of the tone by slightly intruding into the bell was retained; hence, the valves are manipulated by the left hand. All the other valved brass are designed for right-handed fingering, except for occasional instruments made to order for "southpaw" players. A word on the horn's name: we call it the "French" horn because it was introduced into England from France. The French, however, originally called it the "German" horn because of its development in Germany.

Crooks

One very successful improvement on trumpets and horns was the addition of "crooks" in the sixteenth century. These were circular tubes of different lengths that could be attached to the instrument, thus enabling the player to sound a new series of notes

for each crook. This meant that the player needed but one instrument and a set of crooks instead of a different instrument for playing in each key. A similar contrivance, called a "shank," served the same purpose, differing only in that it was a straight pipe that might be inserted in the instrument, thus lengthening the tube. Due, however, to its limitations, the shank never received the same popularity as the crook.

We may be thankful today for our instruments enabling split-second change of notes, when we consider the players of former years, who carried crooks and shanks with them, making as many as thirty-five changes during ONE composition!

Horn bands became popular in parts of Europe during the seventeenth and eighteenth centuries. Proprietors of large country estates kept such bands on their staff. It was not uncommon for a very wealthy man to carry such a staff of musicians that he might have a band with him on his travels, leaving one to perform the necessary functions at home.

A development of this sort took place in Russia, with bands providing a complete chromatic scale through sheer numbers. Envision a row of musicians, each with an instrument of the appropriate size for the easy production of one note. Their horns were straight and ranged from nine inches in length at one end of the row to twelve feet (with a supporting tripod) at the other. With one blowing C and the next C sharp, and so on, a complete chromatic scale was possible. We have something on this order today, in our bugle bands of differently pitched instruments, although they may be equipped with one valve for adding further notes.

Precursors of Valves

In the second half of the eighteenth century two forms of experimentation were applied to horns; both foreshadowed the valve mechanism. The first of these was the joining of two horns, one in D, the other in E♭; a device for switching the mouthpiece from one to the other was provided. This allowed a chromatic scale in the upper range, but changing from one horn to another was not "instantaneous" as claimed by its inventor. Another horn was equipped with several different crooks; a dial plugged in the one desired. However, besides being heavy and awkward due to

all the necessary hardware, the dial action was too slow to be practical.

This sort of mechanism survives today in two instruments. One is the modern double horn, actually two joined together; a thumb valve switches the F horn into the B♭ . An invention by Adolphe Sax, of Belgium, also has proved successful. This is a combined slide and single-valve trombone, the valve serving to lower the pitch five semitones. Having the bore of a bass trombone and the length of tubing of either tenor or bass, it is known as a tenor-bass trombone. Sax too was responsible for the invention of the saxophone and the group of instruments making up the saxhorn family. These were, from high to low, E-flat cornet, B-flat cornet, E-flat alto, B-flat baritone, B-flat euphonium, E-flat bass, and double-B-flat bass. You may be interested to know that the earlier bass trombone (still used in some English and Colonial bands) is a much larger instrument, with slide so long that a handle must be added to reach the lower positions.

Valves

Finally, early in the nineteenth century, valves were introduced. Once again experimentation went on, with from one to as many as six valves being added. It was Adolphe Sax who, in 1845, improved and led to the ultimate perfection of valves as we know them today.

Valves were applied to the trombone early in the nineteenth century. This three-valve instrument has not received much favor since it cannot compare with the slide model for true intonation. Also, in the opinion of many, the valved instrument sacrifices the nobility of the true trombone tone. However, valve trombones are still manufactured, and are useful in certain situations. Sometimes they are given to small beginners to enable them to start their study of the instrument until they grow into the slide model. They are also occasionally found in dance bands for effects where more agility is desired than the slide can provide. Further, some bands employ them on the march, where slide manipulation is difficult and where the instrument is liable to be damaged. (I once saw an escaped slide skitter more than thirty feet over a frozen field. Imagine the psychological effect on the director and

player, to say nothing of the physical effect on the slide!) Some modern instruments are designed so that either slide or valve mechanism can be applied.

Since the middle of the nineteenth century, there have been only minor improvements to instruments of the brass family, but who knows what the future may bring?

To do a detailed history of our brass family would have proved a much lengthier, though easier, task than this; I have picked only the highlights in its evolution from the animal horn to ours of today, that you may have a brief picture and appreciation of what has been passed down to you.

Appendix 2

Transposition

In music, "transposition" means the change of pitch from that originally written. For instance, if a song is written in a key too high or too low for a singer, it is "transposed" to fit the singer's range. The terms "transposing" and "non-transposing," when applied to instruments, refer to whether or not they sound the actual pitch of the notes written for them. If they are non-transposing instruments, the notes they read are the same as the ones they sound; if transposing, the notes sounded are different from those written. Actual pitch of notes – regardless of how written – is called "concert," and instruments are named according to what note actually sounds when the note "C" is written for them. Thus, the B♭ trumpet, when reading C, produces the note B♭, and is so named. This nomenclature applies to most instruments – past and present – which have used every pitch at one time or another; exceptions are noted later.

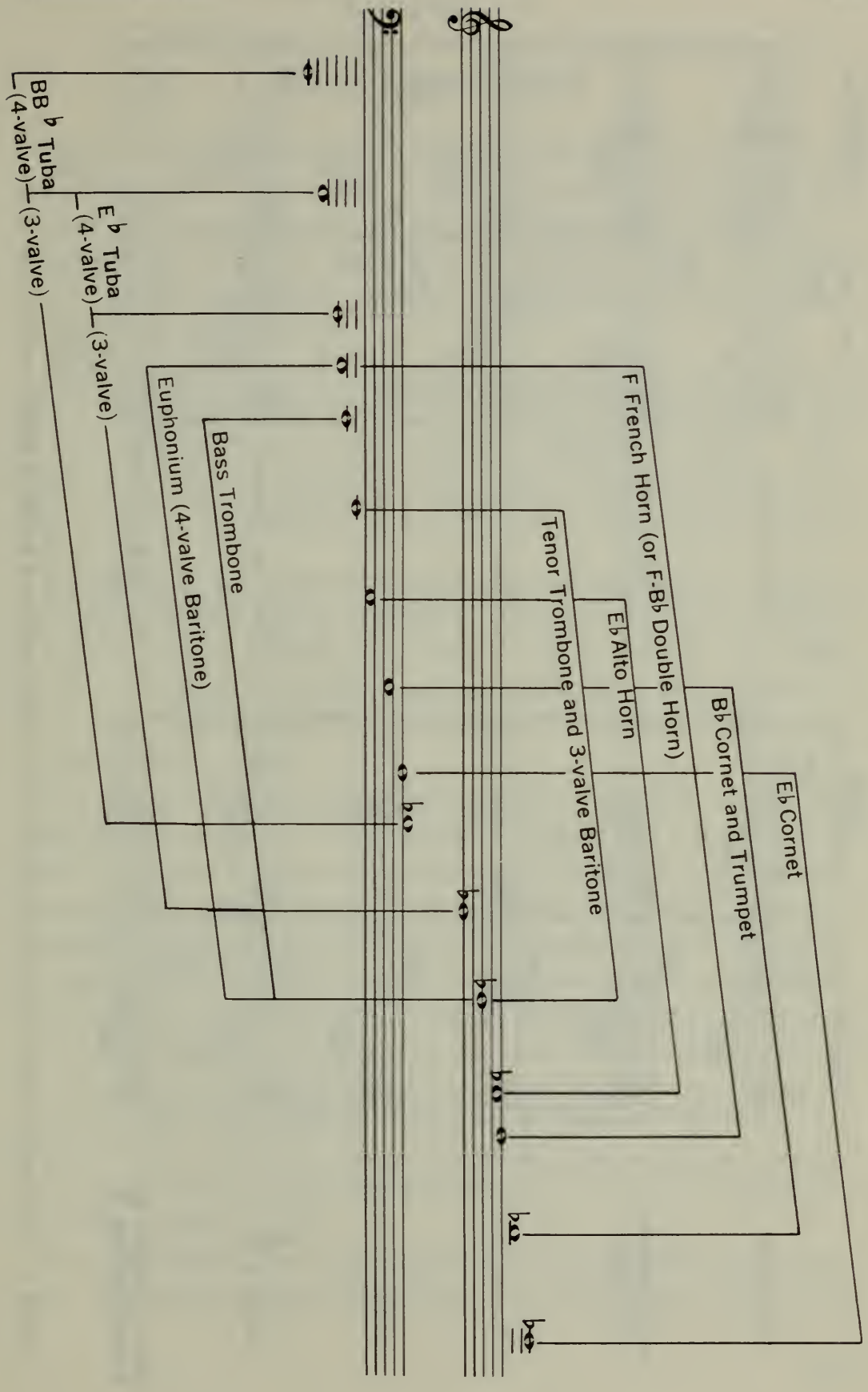
The problem, then, with the transposing instruments is that a note on paper is going to sound different in actual pitch. Custom relieves the player of the responsibility of producing the desired note and places it with the composer or arranger. For instance, a writer, knowing that an F horn is going to sound "F" when "C" is written, writes "D" when he wants the sound "G."

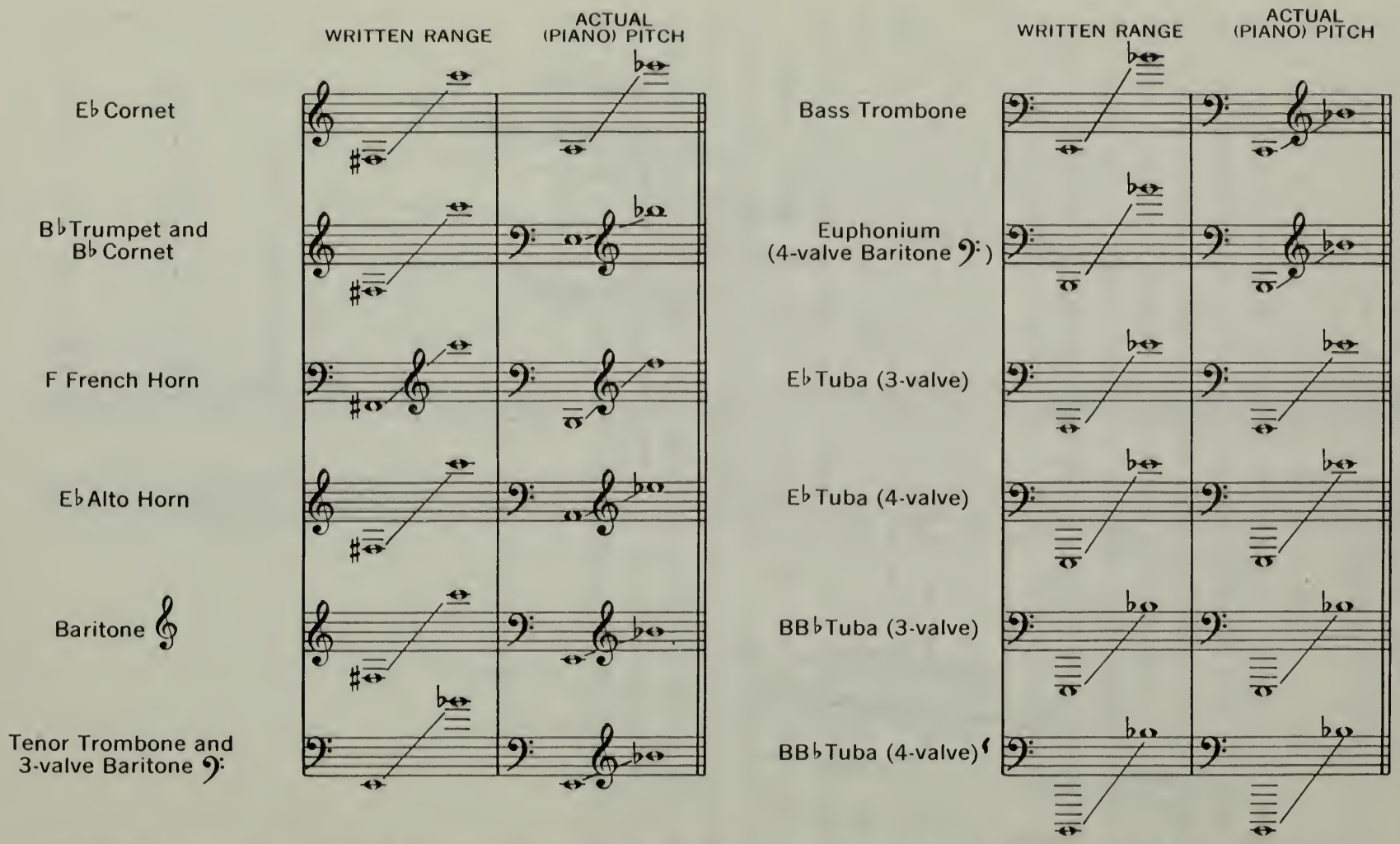
Many wonder how this apparent confusion came about; the answer lies partly in history, partly in written music of the present day. If you remember, the trumpeters and horn players of the past were equipped with many crooks to pitch their instruments in different keys. Can you imagine how difficult it would be for a player to play a given note in concert pitch? First of all, he would have to think of which crook was in his instrument, then he would have to reckon which harmonic of that crook he should produce. Since so many notes could be produced at different levels with various crooks, the sight of any given note could only pose a problem that would be almost impossible to a sight reader. The sensible solution arrived at in those times was to assume that all

players would *read* as if their instruments were pitched in C (as shown on the table of harmonics on page 107) but that their *sound* would be determined by the crook applied. The result was that, when the player saw a note, he reacted to a certain point of his range, not having to guess the note at concert pitch. This system of notation has survived up to the present time; a trumpet player, for instance, reads with the same fingering and in the same relative range, no matter in what key his instrument is pitched. The only time a player needs to transpose is when he is reading a part conceived for some pitch other than that of his instrument; while this happens occasionally, it is the exceptional case rather than the rule.

One last word about the naming of instruments: in this country music for brass written in the bass clef is always at concert pitch. The lower brass, therefore, read and sound the same. However, they are named according to their "open" fundamental; hence, we have the Bb trombone and baritone, and the BBb and Eb tubas.

Tables follow, showing the ranges of the various brass instruments both as written and as sounded. It is interesting to note that just as there are four natural divisions of the human voice (soprano, alto, tenor, and bass), our instruments follow a like pattern. For soprano we have trumpet and cornet, for alto the horns, for tenor the baritone and tenor trombone, and for bass the bass trombone and the tubas.


E♭ Cornet
B♭ Cornet and Trumpet
F French Horn (or F-B♭ Double Horn)
E♭ Alto Horn
Tenor Trombone and 3-valve Baritone
Bass Trombone
Euphonium (4-valve Baritone)
E♭ Tuba (4-valve) (3-valve)
BB♭ Tuba (4-valve) (3-valve)



Ranges of French Horn, Trombones, and Tubas are sometimes extended downward by use of pedal tones (see page 107.).

Appendix 3

Teacher and Pupil

I have tried throughout "Prelude to Brass Playing" to write for the student who may not have the opportunity to study with a teacher for his instrument. I have gone into detail on the fundamental points of brass playing. I have shown what I consider right and, in many cases, what I consider pitfalls to be avoided. That is as far as I can go.

Only so much by way of advice can be put down in words. It would be an impossible task to list what could happen, to foresee all the difficulties that might present themselves. That which proves difficult to one student may come easily to another. What one student accomplishes in a week may take another several, and so on.

Though you are conscientious in your desire to play and play well, YOU MUST SEEK ADVICE. This book is but a prelude. It tells what you should know before you start and then helps you to make that start. Provided you follow the advice given and work hard, then you will have the solid foundation upon which to build further study.

You cannot, however, be expected to know how gradually and completely a course of study should progress. Here is where you need the advice of someone in music; seek out the best musician you can find, regardless of the instrument he plays. State your case and ask for assistance. You will be surprised at how readily he may adapt his learning to your instrument and lay out a course of study for you, as well as pointing out any errors in your playing.

It is good for psychological reasons also to have someone check on your playing at regular intervals. Knowing you are to play for someone each week will spur you on to greater efforts in your daily practice. And, of course, will make you a player just that much sooner. Make every effort now to get advice; it will increase your chances of success!

If you are fortunate in already having a teacher for your instrument, respect his superior knowledge. Go to him to be taught. Dis-

agree with him about baseball if you will, but agree with him about music!

Accept his criticisms as they are meant – to put you on the straight and narrow path to success. Constructive criticism is like a doctor's prescription – a treatment for an ailment. If a treatment is suggested in your playing, accept it gratefully and profit by it.

Follow his judgment. He will know, better than you, your stage of development. If he insists that you stay longer on certain exercises than you think necessary, do not regard it as a punishment. Remember, he is the coach!

Co-operate. Know that once he shows you WHAT to work at, WHY and HOW to work at it, you are on your own. It is then up to you to do the work. Show your sincerity by going to the lesson with your work done. He will not appreciate listening to you practice – you will not appreciate being kept on that work for another week.

Ask questions – lots of them! Question every solitary theory, every bit of advice of which you are not positive – of which there may be doubt. Your teacher would much rather you ask questions, than have you pretend you know and, possibly, get on the wrong path.

Stay with the course he sets for you. He has taken the responsibility of turning you into an accomplished musician; he knows the successive steps necessary for you to arrive at that degree. Do not ask him to jump rungs of the ladder. If you want to play a melody, ask him to pick one for you rather than attempting pieces in your home practice that may be beyond your capabilities.

Go to your lessons regularly, and be prompt. You do not want to miss a single lesson. You want all the teaching you can get. If it is possible, have a warm-up before going to your lesson. That way, he will hear you at your best.

Do not make the mistake of shopping for the teacher with the lowest rates. It can be expensive and disastrous!

Appendix 4

Letter to Parents

You are to be commended for the decision to afford your child an opportunity to study music. It was at once generous, good sense, and worthy of you: generous in that there may be expense and inconvenience involved, good sense in that you are providing a fine hobby to tide your child over formative years, worthy of you as parents in that you are giving serious thought to his future.

While he may at the moment see little beyond the thrill of playing melodies and the obvious social advantages, it is probable that your vision extends to the deeper understanding and appreciation of music he will acquire, to the educational and character traits a student unconsciously develops, and to his further appreciation of the other arts following his studies in music.

It remains now for him to make his start. In anticipation of the possibility he may not have a brass instrument teacher, the course ahead has been outlined, with detail on each phase of study. I feel a student who gives through study to the instructions and patiently follows them to the letter may attain the necessary foundation upon which to build sound musicianship.

It has been my experience that a good pupil (and this has little to do with talent) is usually so because of good home influence. A poor pupil may almost always be traced to a home where there is lack of parental interest or understanding. I also recall instances where parental interest was strong, but misguided.

Some ways in which you may contribute to your child's interest, efforts in study, and ultimate success are as follows:

(a) Show your liking for his choice of instrument. He thinks it is the only one in the world. Let him know you think so too. Acquaint yourself with its working principle and method of producing sound and you will be in better position to understand the difficulties and problems ahead. Hearing you use the words "embouchure" and "wind control" at mealtime chats will assure him he is not traveling the road alone.

(b) Give him a practice room. A brass student needs good

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acoustics in a "live" room where tone will ring out clearly, a room with a minimum of furniture and, if possible, away from household traffic. Concentration is essential in practice. Show respect for his need of quiet by turning off radio or television; discourage visits from his chums during practice hours. Never on any account let him sense that his practicing is a nuisance.

(c) Encourage regularity in practice. A student desirous of playing will not always practice without being pushed. His love of music will not always be sufficient to make him want to practice. A beginner does not pick up an instrument and play; he picks it up and studies. The playing, the music, comes only after concentrated work. This work is not always vividly interesting, with its endless repetition, hours of developing wind control, tone, etc. A youngster is still a youngster; it is only normal for interest to surge and recede. No one ever born can be expected to go into music practice always with an eager heart. Beethoven would never have turned out a single composition had not his father forced him to study. A modern violin virtuoso admits he would have give up study at an early age gladly, had this been allowed.

Parents must accept responsibility in this matter. The utmost has been done to make courses interesting, but your help is required. If your child is fortunate enough to have a teacher, keep in touch. He will appreciate your interest.

Early-morning practice is desirable, particularly during summer months. At that time of day there are fewer distractions and the mind is fresh. Put up with any grumbling – it will change to thanks later.

(d) Avoid comparing your young brass-instrument student with, for instance, a beginning piano student. Each instrument calls for a course of study peculiar to its difficulties and they should not be confused.

On an instrument of fixed pitch, such as a piano, notes are available from the first moment a student runs his fingers from one end to the other. He can see his notes before him. Once shown which are which, he may be directed to small, beginners' pieces.

The brass student, on the other hand, has nothing concrete facing him. He is obliged to *make* each and every note in the compass of his instrument. Accept the fact that progress in the

early stages of his study will not result in easy-to-listen-to melodies. Encourage him to better sounds on his first notes. Ask him to demonstrate, to play for you, to explain on what he is working. Interest coupled with praise will do wonders to keep up his morale.

(e) No matter how beneficent the home influence, your child is bound to be influenced by those with whom he is in contact elsewhere. A student's purpose can be undermined by chums who openly show contempt, not only for the wish to play, but for learning of any kind. Encourage good associations — suggest duet playing with someone confronted by the same problems. This important point is worthy of serious consideration.

(f) Parents should regard it a duty to open to their child all avenues in music, while suggesting a high standard of musicianship. He should be given a choice as to the fields he may explore, while at the same time be afforded an opportunity of developing broad-minded appreciation of all good music.

A fortunate musician is he who can thrill to symphonic playing, who can get a kick out of marching down the street with the town band, who can enjoy an evening of quiet duet playing, and who can sit in on modern dance playing. This player will have a lifelong appreciation of varied music, and will not depreciate those whose preference in music differs from his own.

Brass instruments are far from easy to play. Respect your child's courage in continued study. Do all you can to strengthen his purpose and do not hesitate to show your faith in his ability to succeed. His success will be your reward.